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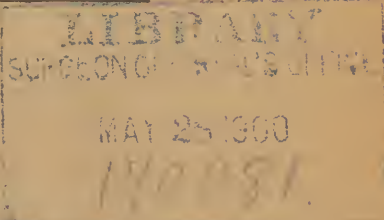


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HEALTH AND BEAUTY

By EMILY S. BOUTON
1712

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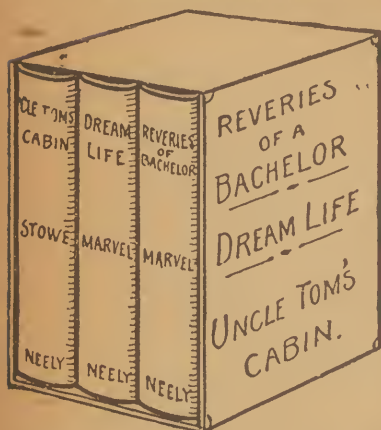
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HEALTH AND BEAUTY.

CHAPTER I.

NECESSITY OF PHYSICAL CULTURE.

Oh to be strong ! Each morn to feel
A fresh delight to wake to life ;
To spring with bounding pulse to meet
What e'er of work, of care, of strife
Day brings to me ! Each night to sleep
The dreamless sleep that health can give ;
No weary ache, no wearing pain.
Ah, then indeed 'twere joy to live.

Oh to be well ! The red, red blood
To swiftly course thro' veins of mine
And wake anew hope and desire ;
Each breath-like draught of sparkling wine.
No more to dread the coming day
Nor hopeless hate the morning light.
To hail with joy the night of rest.
Ah, then to live were keen delight.

There is no ailing woman upon the face of the earth but that feels this to the heart's core. To live on from day to day subject to almost ceaseless pain, or if not that, to a weariness and languor which grows to be insupportable, is misery. Join to this

■

the necessity of fulfilling duties from which there is no escape, and which with health would be a pleasure, but without it are a perpetual dread, and you have the condition of a large class of American women to-day, and especially of those who live in the country. The old idea that a farmer's life was the freest, happiest and healthiest of lives, is exploded, at least so far as the wife is concerned. Statistics show that her days upon earth are fewer on an average than those of her sisters in the cities, and also that though in girlhood she may be rosy and hearty, middle age finds her dragging out a weary existence full of pain and misery. If she comes to old age, it is rarely of that beautiful kind in which the light of the golden beyond seems to shine back in a glory upon the peaceful face, an index of a spirit and body resting on earth preparatory to that other gladsome, glorious life, but the bowed form and withered, pain-struck features tell the story of years of toil and care and physical suffering.

Enough ailing women there are, however, in towns and cities to almost justify the remark made by a foreigner visiting this country, that "American women were pretty and interesting, but a race of invalids." The question is why this condition of things exists. It cannot be because they are not as well cared for, cherished as tenderly and made as comfortable as those of Europe, for the contrary is the case. It is not the fault of the climate, for there is every variety to be found in our land's broad extent.

This is true. Nine women out of ten are absolutely ignorant of the mechanism of their own bodies, and consequently when anything gets out of order they do not know how to make repairs. Nor do they know what is necessary to keep them in order, and this is the worst phase of the matter. Not one of them but would think it a criminal thing for an engineer to attempt to run an engine and yet not understand how it is made, the purpose of each part and how all are related to each other. All this must be as clear as the unclouded sun of a Summer's day or he is unfit for his work.

It is just as great a sin for a woman not to know the mechanism of her own and her children's bodies, and even greater, for the consequences of her ignorance are never-ending. Does that sound harsh? Think of it for yourselves. An engineer neglects to oil the machinery, to procure the right kind of fuel, or uses up his supply faster than he can get it in, racks his engine in every possible way, and then if it does not run well or goes to pieces, nobody is surprised while holding him accountable. Yet this is precisely what women are constantly doing with the intricate machinery of their bodies through their ignorance of its construction, and the terrible results are handed down from generation to generation. Weak, ailing mothers cannot bear strong, robust children, and through lack of proper care of the machinery, strong, robust children may grow up into delicate manhood or womanhood. It is because of its far-

reaching consequences that this sin of ignorance is so heinous.

It is not a necessity. A very little effort, a little study will make the anatomy of the human body familiar, and give a decent insight into its physiology. This knowledge would play a most important part in helping women to preserve their health and therefore their beauty. Young girls should be taught to give their muscles as vigorous and scientific training as their brains. The mind and body are inseparable, and so should be physical and mental culture.

That there is an increased attention to the laws of health, that women are beginning to recognize the fact that pale fragility, this blow-away-at-a-breath look is not beautiful, that to retain the full glory of their ripened womanhood they must have health and strength, is evident from the improved feminine physique, grown so within the last few years. This has been noticed and commented upon by those who have been absent from the country for a season, and yet there is vast room for improvement.

"Who wants to be thinking about all of these things?" says some one impatiently; "I'd rather live without knowing that I have a liver and lungs and stomach." Yes, if you could; but unfortunately these organs resent both the misuse and abuse which they are apt to receive, so that, willy nilly, you are made conscious of their possession. It is much better to learn their structure and habits, and give them the kind of training which will keep them

from grumbling or from open rebellion. Then, indeed, there is a chance that you may not be constantly reminded that you are human and subject to decay. The beauty of perfect health—and there is no other like it—may be yours. Happy, for with pure blood coursing joyously through your veins, care and sorrow fall away, and life may approach the bright, bright Summer day of which poets so sweetly sing, but which humanity so rarely experiences.

In every school a system of physical education should be conducted under the care of a competent teacher, but it is of physical culture in the homes of the land that this book is to speak of.

It is to urge the necessity of beginning at the cradle to lay the foundation of health and vigor, and to continue through each day and week and month and year of life to keep the body, the temple of the soul, as pure and sweet and clean as Nature intended it should be. It is to tell the ailing ones that the future for them need not be a painful blank, that within their grasp is a magic wand that will make the sun of happiness shine upon them once again. It is to show them where it lies, and by a few suggestions, simple and easy to carry out, teach them to seize and hold it forever. It is to help all women to preserve, if still theirs, or to bring back if lost, their crowning glory, Health—and therefore Beauty.

CHAPTER II.

ABOUT EATING.

Mr. Spoopendyke always calls his wife a "measly woman," but whether it is because she presents an appearance that recalls one of the aggravations of his childhood, or that it is only an expression of his intense disapprobation of that much "set-upon" woman's daily walk and conversation, the chronicler of the doings of the Spoopendyke family deposeth not. I have often thought that the term conveyed a very vivid idea of the rough skin, or brown and spotted appearance of many women who "stuff"—and I use the word in its real sense—three meals a day into the stomach without any question as to whether that much-abused organ wants them or can dispose of them after they get there. As a consequence both health and beauty are sacrificed, and then they grumble because Dame Nature got them up in such a careless way, never dreaming that all disease is simply her emphatic protest against disobedience to her laws, which are, in a way, inviolable.

Socrates used to give some very good advice to people—advice which has come down to us invested

with a dignity that a life prolonged through centuries bestows upon all things. One of his most emphatic monitions was contained in the pregnant words, "*Know Thyself.*" History tells us that he had much need of spiritual comfort because of the unfortunate condition of his domestic affairs, and philosophers have concluded that this was his quaint enunciation of the necessity of humanity to understand how much rasping can be borne with resignation, if only a man knows his own nature well enough to hold it in check under all aggravations. In my opinion the real truth of the matter was that he saw Zantippe was suffering from dyspepsia, which was continually made worse by her total ignorance of her physical anatomy and the laws that governed her being. Socrates was progressive, and his pithy utterance was directed as much to physical self-knowledge as mental and moral. This translation of the old sage's meaning may not be satisfactory to everybody, but it suits me, and the deprecator may find a better.

The body was intended by the Creator to be a beautiful temple for the indwelling spirit, to be kept sweet and pure by every means possible to human effort guided by wise forethought. "In His own image." If we believe that, then surely we have no right to distort and disfigure it out of all semblance to the grand ideal of the Infinite by neglect and ignorance. Disordered digestion and impure blood are absolute sins, to be atoned for in some way as certainly as any other. And I feel sure that when

we have "shuffled off this mortal coil" and passed on into the better land upon whose shining shore our loved ones wait our coming, we shall look back and know that disease and premature death are by no means the least of the wrongs weak human nature inflicts upon itself.

We eat to live, say the wise men, but more often people appear to live to eat. It is well to enjoy the good things of life, but it is also well to be moderate in this enjoyment. And yet it is not alone the glutton who works his stomach in a way to produce rebellion, but delicate women who generally do not dream that they are doing wrong. It is simply lack of thought of the purposes for which food is taken, and ignorance of the best way to assist nature in carrying out these purposes.

The celebrated Dr. Abernethy said: "Nature seems to have formed animals to live and enjoy health upon a scanty and precarious supply of food, but man in civilized society, having food always at command, and finding gratification from its taste, and a temporary hilarity and energy result from the excitement of his stomach, which he can at pleasure produce, eats and drinks an enormous deal more than is necessary for his wants or welfare; he fills his stomach and bowels with food which actually putrefies in those organs; he also fills his blood-vessels till he oppresses them and induces disease in them as well as in his heart. If his digestion be imperfect, he fills them with unassimilable substances, from which nu-

triment cannot be drawn, and which must be injurious. In proportion as the powers of the stomach are weak, so ought we to diminish the quantity of our food, and take care that it should be nutritious and as easy of digestion as possible.

Two great offices are subserved by eating and digesting. The waste of the body, which is constantly going on in proportion to the strain applied mentally and physically, is repaired, and its natural heat is kept up to its normal degree. Vigorous exercise of mind or body destroys the tissues, and if they are not replaced, sooner or later death ensues. When all the processes of life proceed naturally, that is when a person is healthy, the appetite is a sure criterion of the rapidity of waste, and the amount needed for repairs. Natural instincts regarding food are healthy, as they are in every other direction. A child left to himself, or a savage, eats only when the call is imperative. The demand satisfied, and he returns with as much gusto as that with which he comes from it, to the pursuit which Nature interrupted.

Civilized people do not do this. They tickle the palate with delicacies, and create a false appetite, which loads the system with more than it can dispose of. The natural heat of the body is increased until the vital forces are consumed, or, the fires are made to burn so low through the smothering process, as to bring the chill which finally ends in death.

To illustrate still further—for I want to impress the truth upon your minds that if you eat more than

you can readily digest, no matter how small the portion, you do so at the risk of your health—you find the heat from your stove is becoming less and less, and by and by it is not sufficient to carry out any of the purposes for which it was intended. Investigating the cause, you discover, perhaps, that the fuel has burned low, and all that is necessary is to furnish a fresh supply to restore the desired temperature. But if you are a commonly intelligent woman you use some good sense in the matter. Should there be a fine bed of live coals, you may put in considerable coal or wood and the fire will seize hold of it and burn away right merrily.

Suppose, however, the new supply is not of the right sort to consume rapidly. It is soggy, and heavy and damp, and it seems to deaden down the fire instead of making it brighter. Under such circumstances you will not think of stuffing more fuel on top of that, and again and again until it is all extinguished, but you will be far more likely to lighten its load, until by slow degrees the flame will revive and get back its pristine strength. And you may find it necessary to take the smouldering stuff all out and start the fire anew from the little sparks that are left there. You take good care afterwards to have the right kind of fuel, and to use just enough to keep a steady heat, no more, no less. Nor do you let the drafts get clogged up with the ashes and coals and cinders.

You do not treat your bodies in that sensible way.

You put fuel in whether it is necessary or not, because the time comes around when you have been in the habit of doing so, and you pay little attention whether it is the kind that your stomachs can consume or not, till by and by you find the fires running low, but you do not stop even then. More fuel is piled on and the mass grows sodden and heavy, until at length you discover the fire is almost out—in other words your digestion fails, and you are miserable invalids.

Before going further in this matter, however, let us thoroughly understand this process of digestion, the most important of all the processes of the body.

CHAPTER III.

THE FIRST STEP.

A mouth and teeth are universal gifts, sometimes things of beauty, and, therefore, joys forever, or rather until the stomach becomes disordered and the teeth begin to decay—but always regarded as necessities. The mouth, besides its part in making the human face divine or the opposite by its shape and expression, is the portal or gateway through which everything that is to nourish the body, to give it beauty and vigor, must pass on its way to perform its mission. Who is it that says whatever else may be forgotten in this life, the way to the mouth, after it is once learned, never passes from the memory. And it is not strange that it is so, since there is so much of pleasure connected with that knowledge, while upon it life itself is absolutely dependent. Generally, however, it is not thought of so much in connection with the food which we eat, but regarded simply as a feature of the face and as the home of that little unruly member which plays so large a part in making or marring happiness in this world. Yet this same unruly member has very much to do with our welfare in every day life, for in it re-

sides the sense of taste which tells what is fit or unfit to enter into the stomach. This sense of taste may be injured by abuse just as any other sense is. We know it is blunted by hot spices, tobacco and strong drink, but treated as Nature intended it should be, it takes the first step in nourishing the body, for it tells by the pleasurable or disagreeable sensation produced what will most readily arouse the mucous membrane to action.

The other occupants of the mouth, which take a most important part in the process of digestion, are the teeth. Were we made upon the same plan as the vegetables, to absorb all of our food in a form ready to do its work without further modification, we should not need teeth except for beauty, and the majority of people when wrestling with toothache pangs which turn the earth into a howling wilderness, would, I suspect, be willing to have been created without them. Food that is taken by human beings has much higher purposes to serve than that absorbed by vegetables, as much higher as an intelligent man or woman is than a beet or a carrot. It is imbibed in a solid and a fluid form, each containing certain of the elements which the body wants; it is animal and vegetable, and these must undergo a change before they can be absorbed. The first agent in affecting this change is the teeth.

In a general way everybody understands what these little instruments are for, that is, to tear their food in pieces, to chew it, and get it ready to send

down into the stomach. They may or may not know that they have thirty-two of them, when the list is complete, and that all have some definite office, except, perhaps, the wisdom teeth, which I must confess I could never see the use of unless to torture poor humanity which believes it has endured all the pain necessary from tooth cutting in its childhood. The others, however, are cutters and tearers and grinders. This may not be a purely scientific way of naming them, but it expresses exactly their office.

First come the four flat front teeth in each jaw, which have a sharp, knife-like edge, exactly fitted for cutting up into fine bits things suitable for disposal in that way. They are called incisors, from a Latin word *incidere*, meaning to cut. Then come the sharp-pointed canine teeth, one on each side of the incisors, in the upper and lower jaws. These are the tearers, and are what all flesh-eating animals make great use of in tearing their food. The name comes from *canis*, a dog, though it is really difficult to see why they should be thus called, as other creatures make them quite as useful as our canine friends. Lastly are the molars, so styled from *mola*, a millstone, and these grind the food after it has been cut or torn. They are much larger and broader than the incisors, and they have indented edges, with sharp points arranged parallel to the jaw. These teeth are very strong, Nature seeming to have designed them to do more work than the others. The best description I have ever seen given of their method of

accomplishing their duty is to imagine the jaws two pairs of scissors set points to points, the incisors being the points, which travel farther in working and therefore accomplish less, while the molars are the hinges that move slowly but are, as a colored brother remarked of his lazy wife, "wonderful powerful when she got down to work." It is really the principle of the lever. By the motion of the lower jaw from right to left this grinding process is carried on, and it is a very important one in thorough mastication. The molars are more firmly fixed in their places than any of the other teeth, because there is more strain upon them. These three kinds of teeth are found in all carnivorous animals, as well as in man, but in the creatures whose food is chiefly grass and herbs, incisors are placed only in the lower jaw, and just enough of them to cut off their food; there are no canines to speak of, and the reduction of the food to a proper state before it is swallowed is done by the molars. And it is done thoroughly, too, for there is no living thing besides man that so disregards the plainest orders which Nature gives, that treats her warnings with such contempt, and then groans so unceasingly over the consequences.

The least thoughtful cannot but see that these variously constructed teeth were made for a purpose, and that purpose is not merely to add to the beauty of the mouth. Their very creation in these particular ways shows that they have the first work to do in getting the food ready for its office, that of nour-

ishing the body. If it had been intended that it should be bolted into the stomach without the cutting, tearing, grinding process, the teeth would not have been made at all, for Nature never does any idle or useless thing. She is a most economizing worker. When, therefore, you do not masticate your food thoroughly, the first step has been taken towards a disordered stomach and that multiplicity of evils combined in the one meaning word "indigestion." You have sent a guest before he was wanted, and the host rebels at your rudeness. He does not always turn him out, but he grumbles at the compulsion used, and will at last pay you back with interest.

The constant hurry-scurry with which Americans do everything is one cause of this hasty eating. People rush to their meals and away again, as if a whole lifetime was to be compressed into the hours before one day passes into another. They eat because they are hungry and food is agreeable, but to do it with the care which would be given to their general work or business is entirely without their province. To finish a piece of work, to make a few dollars, to conclude a good bargain, nine persons out of ten will swallow their breakfast, dinner or supper with a lightning rapidity that would be destruction to any other undertaking. Warn them that this haste for the one time will follow them with evil consequences for a week or month, and that continued day after day, wrecked health will surely result.

and they will meet you with a grim smile of disdain or unbelief, coupled with the assertion that it can't be helped. Yet it is certain that everything which is a success in this life depends upon a good beginning, and thorough mastication that can only be accomplished by eating slowly, is a necessity for perfect digestion. The reason why I will tell you.

CHAPTER IV.

BUSY WORKERS.

Eat and be merry, the strong man said
His form was stout, and his cheeks were red,
And he laughed as he sat by the table there,
Discussing the dainties rich and rare.

Eat and be merry. Who cares to know
How time is passing? Blow high or low,
'Tis meet this duty be done as well
As aught this side of heaven or hell.

A story is told of a clergyman who happened to meet a rustic upon whom he thought a religious impression might then and there be made. Accordingly he spoke in a grave, solemn way befitting the occasion and the work he desired to accomplish. "Jack," he asked, "if Satan were to suddenly appear, which of us two would he take?" For a brief moment Jack hesitated, then he replied as if sure of his ground, "Me, sir." This was not exactly the answer expected by the holy man, and he hurriedly inquired, "And why?" "Well, sir," was the reply, "because it might be his only chance to get me, while he's pretty sure of you, sir, all the time."

Perhaps you do not see what Jack's reply has to do with the subject. As Capt. Jack Bunsby would say, "the bearing of the obseruation lies in the

application on't." It simply comes to my mind when I watch some people eat, that they "shovel" in the food as if they thought it might be their only chance to get it, while every other thing in life was sure all of the time.

It is not likely that they consciously have this fear in their minds, but it is certain that every time they send food traveling at railroad speed down into their stomachs, they diminish their chances of future enjoyment of the good things of life, if they do not destroy them utterly. For they do exactly what an engineer does who, with plenty of lubricating oil at hand, forces his engine to go creaking on its way, wearing itself out by the friction that might have been so easily prevented.

The food was not intended to be merely masticated and sent on its journey in a dry and hard powder to scratch and irritate the throat and stomach. It is to be reduced to a sort of pulp or paste, and this is effected by mixing it with the product of a number of small, spongy-like organs situated in the mouth, that are called salivary glands. They seem to be always filled with water, which every movement of the jaw forces out in considerable quantities.

These glands are three in number, and are named, first, the parotid; second, the submaxillary; and third, the sublingual. They furnish three distinct fluids, and these, mixed with the secretions of the mucous follicles of the mouth, form the saliva, a proper supply of which is absolutely necessary for

good digestion. The product of each of these glands has entirely distinct characteristics, but together they make the soapy, frothy-looking fluid which is familiar to everybody. It is without taste or smell, is slightly viscid, and contains a little albumen—which you all know as the white of an egg—or what closely resembles it, and a little soda. By dissolving the food it begins the series of transformations which turns that or part of it into the red blood that courses through the veins, upon the purity of which absolutely depends the value of each day's living. Just exactly how it accomplishes this part of its work we cannot tell, but it has been clearly demonstrated that its plentiful supply is a necessity. It is the first of the oils needed to make the digestive machinery move smoothly. It might be a satisfaction to know however, that according to good authorities the parotid secretion prevents thirst; the sublingual is more directly concerned in deglutition, and the submaxillary assists in giving taste a perfection which it could not otherwise attain. Suppression of action by galloping the food down its narrow pathway, prevents the carrying out of these labors, and blunts their power for future use.

It is a curious thing that the very sight and smell of nutritious food will stimulate the salivary glands to action. Evidently they have no disposition to shirk their duty, and if respectably treated do an astonishing amount of labor. It is hard to realize that these little glands can pour forth such a quantity of

saliva as experiments have shown to be the case. For instance, it is calculated that a man in good health will consume in a day 19 ounces of bread and 16 ounces of meat. Complete mastication of wheat bread requires 55 per cent. of its weight of saliva, while that of meat calls for 48 per cent. The quantity needed for the day's allowance of bread then is 4,572 grains, and of the meat 3,360 grains. Not content to do all of their work at meal time or when food is undergoing mastication, their indefatigable labors continue, though far less actively, to manufacture their products between times, in order to keep the mouth, tongue, and throat moist and in good order. In the 22 hours outside of the meals it is estimated that 12,232 grains are secreted, and all of these taken together amount to almost three pounds.

Animals set a good example to their superior, man, in respect to mastication as well as in their obedience to other laws of nature, to be spoken of hereafter. They never hurry the operation. Ruminants, as the horse and cow, will chew and chew, first upon one side and then upon the other, until every particle of food has come under the influence of the saliva. They allow no other business to interfere with or to hurry the operation.

Instinct tells them, what man's superior intelligence in many things should render evident to him, that Nature has so perfectly adjusted the machinery of their bodies and made the laws by which they run, that any variation from them is sure to throw it all out of order.

“ Well,” says some one, “ I *must* eat fast. I am not like the beasts of the field who work not, neither do they spin, but I have to earn the bread for myself and my family, and I cannot take the time to chew my food so leisurely.”

No, but you will rush back to your factory or workshop, and if you found the least thing about the machinery which did not go right, if the lubricating oil had not been applied, you would stop it, and wait, if necessary, a whole day until that was done. And why? Because you know that if is not, by and by the works will go to pieces and—they cost money. My friend, your body, next to the spirit which dwells in it, is your most important possession. Nature has made its machinery so delicate that a disobedience to the slightest of her laws for its regulation will throw it out of gear, and yet so strong that perfectly cared for it will last well-nigh a century. You acknowledge the supremacy of law when dealing with iron and steel and steam, but ignore it entirely when dealing with your own body. The mixing of the product of the salivary glands with your food is just as necessary a preliminary, as the oiling of the machinery in a mill preparatory to setting it in motion, and when you rush through your meals you not only ill-treat your own body, but your influence and example will be very likely to cause your wife and children to do the same thing. In other words, you are more considerate of things which may be broken and rebuilt a hundred times than you are of the bodies that can live and die but once in this world.

CHAPTER V.

IT JOURNEYS ON.

I have spoken of the changes which the saliva makes in the food. Let it be understood that this is chemical only in a slight degree. Its office is almost entirely mechanical. In other words, it makes the preliminary preparation necessary for what is to set the digestive machinery in motion, enabling it to begin its labor easily and carry it forward rapidly.

Reduced to a soft, pulpy mass, it is ready to be sent into the stomach. This seems a very simple operation, but in reality is quite complicated, although there is a most beautiful adaptation of the means to the end. The tongue concludes to have a hand in the work going on, and accordingly rolls the mass into a ball, darting hither and thither, in and out of the teeth, picking up every particle that may have lodged in cracks or crevices, and adding it to the larger body. It reminds one of the way boys roll up a snow-ball, beginning with a small one, but turning it over and over, while it grows larger and larger at each revolution.

Made ready thus the food starts on its journey. It seems the simplest thing in the world for it to slip

down its straight, if narrow way, into the stomach, and if there were no other travelers that took the same course it would be. But here there are two, just as Tennyson says there are—

“Everywhere
Two heads in council, two beside the hearth,
Two in the tangled business of the world,
Two in the liberal offices of life,
Two plummets dropped for one to sound the abyss
Of science, and the secrets of the mind.”

The other one of the two in this case is the air we breathe, and none but wise Mother Nature could have made so perfect an arrangement to prevent clashing in their passage way, every time we eat.

In the back part of the mouth, that may be called the ante-chamber, hangs the palate which makes almost a complete separation between the front and back. In this space are three doors or openings, one leading into the stomach for the food ; another opens towards the nose, and the third towards the lungs. The two latter are for the passage of the air we breathe, and no morsel of food must enter therein. The architect has so constructed all of these to prevent this, that only under certain circumstances, which I shall speak of hereafter, does it ever happen.

When the ball is ready to descend, there is a sort of involuntary movement in the antechamber as if some sudden motion were made. And so there is. Swallow with nothing in the mouth, and you will readily perceive it. This motion throws the palate

over the opening leading into the nose and summarily shuts that off. It contracts the tube called the larynx until it is quite small, and at the same moment a little valve like a trapdoor is pushed up and most effectually closes the entrance to that, so there is nothing left for the food but to go its own way down, not exactly a winding stair, but through a cylindrical passage way into the stomach.

This tube, called the *æso*phagus, is a curious sort of thing. If it were quite large the ball might be expected to drop down without any other help than its own weight; but it is small, and often the masticated mass is entirely too bulky not to require some urging forward. "Barkis" might be "willin'," but circumstances would interfere with its free action. The *æso*phagus is made, therefore, of circular fibers or rings, which have the power of contraction and expansion, and this power does not depend upon the will at all. After the food passes the first one, that contracts against it, forcing it against the next, which opens and lets it through in the same way, until the last one pushes it into the stomach. This opening and closing of the rings gives a peculiar worm-like motion to the tube, which does not cease until the ball is safely landed at its destination.

I said this contraction and expansion did not depend upon the will, and a little thought will show you that it does not. When the food is only in the antechamber, called, by the way, the pharynx, you can recall it into the mouth, but after the *æso*phagus

has fairly seized it, you may bluster and blow, but all the same it journeys on without paying the least attention to your wishes. It is utterly beyond your reach, beyond recall, except by force artificially applied.

Sometimes people say they swallow the wrong way and they are choked. In reality they have attempted to talk or laugh while trying to swallow, and the air which was necessarily forced out of the lungs by this action, opened the valve and a crumb dropped into the wrong place. Or, perhaps, they swallowed in a hurry, so great, that the air which had already started out had not quite time to escape and let the trapdoor down. In either case the result is the same, and unless the convulsive coughing which always follows the entrance of a substance into those passages intended only for the air, ejects it, death must ensue. This has nothing to do with digestion, but it has with the miserable habit of talking when the mouth is full of food. That is not only ill-bred, but it is absolutely dangerous.

The last ring of the *æso*phagus safely passed, it contracts and shuts the food into the bag called the stomach. This is an organ in the shape of a bent pear with the larger part uppermost. Its size depends almost entirely upon what is put into it. Usually, or when it is properly filled, the space it occupies can be covered by the hand. When more food is needed it begins to contract, and the parts surrounded and supported by it drag upon their

ligaments, and this gives that sensation we call hunger. If this call is not heeded it contracts more and more, until it becomes finally not larger around than a thimble, and only two or three inches long. People whose stomachs get into this condition are said to have died of starvation. On the other hand, it is so elastic as to receive a wonderful quantity of food, and it might be crowded so as to press upon the other organs in a way to cause suffocation. It lies in an inclined position, with the larger rounded end near the heart and the smaller end pointing downwards towards the intestines. At this small end is the pyloric orifice, or the door through which the food that came in through the *æ*sophagus must go out when it is ready to bid farewell to the stomach.

The work which this organ does, or the transformation rather which it effects upon the ball that enters it, is thought by many to be the most important part of digestion, so that it can readily be seen that it is of the utmost importance to keep it in the best of order all through life, and yet there is no part of the body that people so persistently abuse. They treat it as some persons do a gentle-tempered animal which will go on year after year suffering from overwork and lack of care, until finally, goaded to desperation, it turns and rends its master, or, overwhelmed with fatigue and despair, refuses its tasks and lies down to die. The stomach is wonderfully patient and long-enduring, but there comes a day when it

enters into open rebellion, and then woe betide its possessor. This very long endurance is probably one of the strongest reasons why people will not believe that they are doing what will permanently injure their health. Did the rebellion come at once, it would frighten them into an immediate recognition of the law which later on they pay so severe a penalty for breaking.

CHAPTER VI.

THE NEXT STEP.

When this soft, pulpy mass gets down into the stomach, then the real work of digestion begins. You can only help now indirectly in ways of which I will tell you by and by, but if you have masticated thoroughly, this indefatigable worker will take the ball kindly if it suits his taste, but patiently under all circumstances, and at it he goes to see what can be done with it. You remember that it is now shut in by the closing of the cardiac orifice through which it entered, and of the pyloric orifice through which it must go out. The latter remains obstinately shut up until the work is properly done and the transformed food is ready for its journey onward.

The very first thing the stomach does is to call the blood from all parts of the body in order to get sufficient heat to set the "pot a boiling." In other words, the temperature must be raised to ninety-eight degrees Fahrenheit, so that the active agent in this first real process of digestion, the gastric juice, may exert its solvent power upon the food. This is the reason why nothing should be done immediately after eating which will take the blood away from the

stomach. A bath, which calls it to the surface, or mental exertion, that summons it to the brain, or physical labor, which sends it to the extremities, all hinder digestion by preventing the necessary accumulation of heat in the bag. It is a good deal like putting a cake in to bake and then turning the drafts of the stove so as to shut the fire all away from the oven. But of this more anon.

What is the gastric juice, do you ask? The stomach, like all the other cavities of the body, is lined with a mucous membrane, and this is as full as full can be of small glands so close together as only to leave spaces between them for the tiny capillary blood vessels. These glands make the surface look full of ridges and projections of different sizes and shapes, but all are for the purpose of secreting this fluid. Just as soon as the food enters from the œsophagus it stimulates them to work and they immediately begin to pour out the gastric juice in quantities which seem astonishing, and continue to do so as long as there remains anything in the stomach to be dissolved. When digestion is over it ceases to flow.

This is an acid fluid, clear and colorless. Beside the acid, the most important ingredient it contains is a substance called "pepsine." Then there is some salt, a little lime, magnesia and iron. Once it was considered such a universal, as well as powerful solvent, that nothing could resist its action, but later experiments show that it makes no chemical change upon starch

or oil. These are simply melted by the heat, and pass on their way to meet their fate elsewhere. There is one curious property about gastric juice that is worthy of notice, and that is its lack of inclination to putrefy. It is said that it will keep for months in a glass-stoppered bottle and no odor or appearance of decay be visible.

Another beautiful provision of Nature is the way in which every part of the food is brought under the action of this fluid. If the stomach remained perfectly quiet, some portion might not be subjected to its influence, but the muscular coat begins to contract and relax, producing a sort of churning motion that tosses and tumbles its contents from one side to the other, not violently, but in a gentle sort of way, and causes all of the food to be penetrated by the digestive fluid. When this is done it has become a grayish looking paste, that passes through the pyloric orifice into the small intestine. This paste is called "chyme," and until substances are thus changed they are not allowed to go on their journey.

Right here is an interesting fact to notice, and that is concerning the quantity of gastric juice which is secreted. It seems astonishing, but it is estimated that in a man of medium size it is about fourteen pounds daily. Only think of it. All of this material does not pass on with the chyme, but when it has got through mixing the mass, it is re-absorbed with that part of the food which it has thoroughly digested and reduced to a fluid form.

Before following the process of digestion any further, I want to impress upon my readers a few simple laws which are necessary to be obeyed in order that the work of the stomach may be well done. I have already said enough about the necessity of thorough mastication so that the food may be in a proper condition for the gastric juice to act upon. It is also extremely necessary that it should be heated to a proper temperature, which is, as said before, ninety-eight degrees. Then the action is most energetic. If it is one-quarter of a degree less the process cannot proceed. The blood, therefore, should be allowed to go thither and remain until the first hard work is done, so that the required heat may be obtained. From half an hour to an hour should be allowed to elapse before engaging in active work of any kind, otherwise the blood will be called away from its duty. No one of you would be so foolish as to put potatoes over to boil and then extinguish the fire before they were half done, trusting to luck that they would come out all right. But this is just the sort of thing you do—only it is infinitely more foolish, because the consequences involved are so much more serious. Every time you go to work immediately after eating, you disobey a law of nature, and idiotically expect that no harm will come of it. For the same reason you should not summon the blood away from its duty by bathing soon after a meal. In that case its sudden departure from the surface causes such a shock to the system that convulsions

have been known to follow. Two hours is none too long a time to give to the cooking of the food by the stomach before putting out the fire in this way. Let mothers remember this, not only in regard to themselves, but to their children. Ignorance in this respect often lays the foundation of life-long digestive disorders, if it does not produce immediate and violent effects.

Already I hear some of you say "it is impossible for me to rest a half hour after breakfast, dinner and supper. My work would drag all day." Suppose it did? Which is worse, disease which saps every pleasure in life, or a little delay in doing what is not of crying importance to be accomplished to the minute? But there would in reality be no dragging. There are always little things which require no exertion, to be done, if you feel that you *must* absolutely be at work every moment, and the rest would only enable you to work the faster afterwards.

You all know that it would be dangerous to your horse to let him eat a hearty meal of oats and then start him out on the road on the instant to work or run as the case might be. Nor would you let your cows which have been feeding in the pastures be chased around the fields, for you would be certain to get poor milk as the result. Isn't your stomach of as much importance as that of your horse or your cow? Your cat and your dog, if left to themselves, will invariably go off and lie down after eating a hearty meal; but you, with your "higher intelli-

gence," fill your stomachs up with the food which is to repair the waste of the body, and then set the agents who are to bring this about hard at work at something else, with a blind confidence that they will get both jobs through some way. They usually do, but neither is well done.

Another thing in regard to the temperature of the stomach. The very fact of its being necessary to have it heated to ninety-eight degrees in order to work well shows the danger of emptying into it a quantity of cold fluid as many people do while eating, or soon after, thus suddenly reducing the heat already obtained. This subject will, however, come up again in the future.

CHAPTER VII.

DIGESTION COMPLETED.

Perhaps my readers who have followed me thus far in the process of digestion imagine that when the food passes in the form of chyme into the small intestine, the work is done, but that is far from the case. In the first place you remember that I told you the gastric juice had no power whatever over oil or starch. The latter passes unchanged through the pyloric orifice, while the former is simply melted and then goes the same road. It is only food that contains albumen, such as meat, eggs, milk, etc., that have been really digested. And right here it is well to note that the time substances are obliged to remain in the stomach before the door will open to let them through into the intestine as chyme differs greatly, and this difference constitutes their digestibility or otherwise. Taking the variety of food eaten at one meal, and if you could look into your stomach and see what is going on, you would discover that some of them yield immediately to the gastric fluid, while others go round and round, refusing to change at its bidding, and striving to escape without it. They cannot, and so the churning process goes on

until at last they are compelled to give up. But this sort of thing repeated day after day irritates the stomach, and it finally enters a decided protest, and will not work at all without grumbling. Many of you can understand that who have tasks put upon you day after day which you can only accomplish with the greatest effort, leaving you utterly exhausted. At last the vital forces give out utterly, and even if life remains you feel that it is not worth the living. But to return to the food which has entered the intestine.

You understand that the albuminous part of the food has been digested and absorbed into the blood by a process which is not my province here to explain. What constitutes the chyme is the oil, starch, and perhaps some of the meat fibers which were not absorbed, but are disintegrated.

From the pyloric orifice extends a long tube, which is from five to seven times the length of the body, and is doubled backwards and forwards so as to fill up the cavity called the abdomen. It is divided into two parts. The small intestine, which begins at the pylorus and forms all the doublings, and the large intestine, which is much larger and thicker. The latter starts upon the right side at the base of the abdomen, goes up as high as the stomach, passes across in a straight line just below that organ, makes a large bend in front of the small intestine, and then descends upon the left side to its terminal point. The process of digestion is going on all through the small

intestine, and only terminates at the beginning of the large one, which receives the refuse part of the food that the blood or body does not want, and which is to be gotten rid of as quickly as possible.

The first part of the small intestine is known by the name of duodenum, and it is here that the separation really takes place in the chyme of the parts that are necessary to nourish the blood and those which are useless. This is sometimes called the second stomach, because the operations that go on there are so important, and because of its power of expansion, it sometimes swelling out as large as the stomach itself. Here the chyme is brought into contact with the mixed intestinal fluids, which I will have to stop and in a few words name to you.

First is the pancreatic fluid that is the product of a sponge-like organ situated just above the duodenum and behind the stomach. Just as soon as the chyme enters through the pyloric orifice the pancreatic fluid begins to flow into the duodenum. It is really the most important of the three juices, or at least it appears to have the most to do in the next change of the food. This fluid is met by the bile flowing in from the liver, which is a large, dark red organ suspended on the right side of the diaphragm, that, as you may not know, is the muscle separating the chest and abdomen. It is not supposed that the bile has any direct action upon the food, and yet experiments have shown that digestion goes on very imperfectly without it. The third secretion is from

glands situated in the mucous membrane lining the small intestine through its whole length.

It would be a most curious thing to watch the action of this fluid mixture upon the chyme. It seizes the starch "instantly" and immediately turns it into sugar with astonishing rapidity, which then is at once absorbed into the blood. In a dog fed with a mixture of meat and boiled starch, and then killed an hour after, the meat will be found still in the stomach, while the starch has been converted into sugar and picked up by the waiting vessels for the use of the blood. Experiments have shown that this change has been principally accomplished by the action of the pancreatic juice.

Having disposed of the sugar and starch in the food there remains the fatty matter. This is only melted in the stomach as said before, but soon after it enters the small intestine, it is changed by the action of the juices into a white, milky looking fluid, which has been named *chyle*. In this change too, the pancreatic fluid plays the most important part.

The chyle and the refuse matter from which it is being separated, are forced along slowly through the folds of the intestine by the alternate contraction and expansion of its walls. In order that it may not move too quickly there are elastic, fleshy valves placed in its course, and it is obliged to gather force enough to push these open before it can pass on. This detention is necessary in order that the little vessels, which are thickly set for the purpose

all along the inner surface of the small intestine, may have the chance to absorb the chyle as it goes along into the blood. By the time the large intestine is reached, if the work has been done well, nothing of the food remains but the refuse. In the stomach, the albumen is digested into albuminose by the gastric juice and absorbed. In the small intestine the starch is made into sugar and the oil into chyle by the action of the intestinal fluids, and they, too, enter into the circulation. All that remains then is to expel as soon as possible the part which is not needed.

Such is the process of digestion, described very simply, it is true, and with the use of the fewest possible scientific terms, but so that you cannot fail to understand it, if you have followed it at all carefully. As I said before it is the most important process of the body. Deranged, it disorders every other function, and therefore it is of the greatest importance that it be maintained in good order. No one can be healthy, happy or beautiful without good digestion, and no sacrifice of personal pleasure or indulgence can be too great to secure its preservation all through life.

CHAPTER VIII.

NECESSITY OF PURE BLOOD.

If I keep insisting, as I surely will, upon the absolute importance of good digestion without showing you exactly why it is so, you will begin to think I am like the old woman who loved to dwell upon the word Mesopotamia, because though she "didn't quite catch on to its meanin' it had a comfortin' sort of sound." This is not true in this case, for I do fully and entirely "catch on to the meanin'" of good digestion, and I want you to do so too. It means health, vigor, and long life. It means a clear brain, a strong hand, a swift foot, good temper and general happiness. It means a bright eye, a clear complexion, good teeth and everything that goes to make up physical beauty. This is no exaggeration, but plain truth. Neither man nor woman can have the full measure of attractiveness possible to them, they cannot accomplish what lies within the limit of their brain and body without a plentiful supply of good, clear blood, and that depends largely upon good digestion. And this is the way.

As I said before, all through the stomach and digestive tract are millions upon millions of living, ab-

sorbing vessels, with wide open mouths ready to take in the food prepared for them, as I have described to you, and carry it to the blood. They are as particular, however, as you are, that the work of preparation be well done. You do not like your bread or cake half baked, your meat raw, your coffee not boiled, and if brought to you in that condition very likely you will rebel and refuse to take them at all, or if driven by hunger, you do it most unwillingly. That is just the way with these little vessels, and so the blood which was to carry strength to all of the organs of the body which it visits in turn must go on its way without the necessary material. What is the consequence? Why simply that not receiving what they need to keep them in good order, they get out of repair very naturally, and don't half do the work expected of them for the body. And it grows worse and worse every time the blood makes its circuit. By and by like the parts of any other ill-used machine, they begin to groan, some one of them gives out and dire trouble begins. In other words, dyspepsia or rheumatism, it may be some more suddenly developed disease, seizes hold of the body, and happiness is gone.

Perhaps you do not understand about this circuit the blood makes through the system. Let me tell you of it. You all know you have a heart, and in a general sort of way that the blood goes through it, and that its perfect operation is a necessity for health and for life. You have often listened to its beating

and perhaps wondered just what was going on there. Well, this organ is simply a pump with pipes and valves, working, not with a piston, but by the contraction and expansion of its walls. It does not get out of order very easily, but when it does there are breakers ahead for the body which it pumps for. This pump is put into a bag, called a pericardium, and hung between the two lungs and just in front of the spine, but a little more to the left than the right. You know without my describing it what its shape is. It lies obliquely with the broad part up and slanting backward and a little toward the right. Of course this brings the apex downwards, pointing a little towards the left and pretty well forward. It comes really between the fifth and sixth ribs on the left side. So much for its situation in the body. Now for the pump itself. You can easily imagine it divided into two large apartments, one on the right and one on the left, separated by a partition. These again are each divided into two parts, so that there are really four rooms, and they are named just as your parlor and sitting room are. The upper right-hand room is called the right auricle, and just below it is the right ventricle; the upper left-hand room is the left auricle, and the one beneath the left ventricle. Please try and remember these names, and the situation of the rooms.

I told you this pump had pipes, and it has, two systems of them—one to take the blood away all through the body, and the other after it has done its

work to bring it back. The first are called arteries; the second, veins. And remember that the growth and health of the body depends upon the strength and purity of the blood which these arteries carry to every part of it.

Wouldn't you like to follow some of this blood on its journey around once? Well, suppose we are looking in at the left ventricle. It is pretty full, most too full it seems, so it just draws itself up, and the blood not knowing how to make itself less forces open a door into a great long corridor, and away it goes. When all gets out that the ventricle wants to spare, it shuts up the door or valve again, so that the blood cannot come back, even if it wishes to, but must travel on. By and by this corridor, which is really the artery named the aorta, divides; and then divides again, stretching off in different directions, through every part of the body. Of course the blood also divides itself up and runs through each one of these smaller corridors to the different organs, carrying nourishment to them all, and picking up the waste matter which they are thus given the strength to throw out.

Now you can see where the difficulty comes in if the stomach and digestive organs have not done their duty. The blood does not contain the properties necessary to strengthen these organs so they can do their work properly. As a consequence they get clogged up, and not only that, but growing lazy and languid, just as you are when you do not feel exactly

right, they do not take out of the blood what Nature means they should, so it goes on with matter that ought not to be there. Of course it grows worse the longer it continues on its journey, and by the time it gets to the end it is miserable stuff indeed. Where is its end do you ask? I will tell you, so you will understand the whole function of circulation, though the mischief I started out to speak of is already done.

These little corridors go on dividing, growing more in number, but smaller and smaller until they become the tiniest possible, so they can only be seen through a microscope. But the blood in them is still working to give what nourishment it can to the tissues of the body, but if it is so overloaded with impurities, it cannot do much, and this is one reason the skin does not look clear and pure. When these vessels become so small they are called capillaries.

The blood now passes from them into vessels of a different kind but equally small, and this is the second system of pipes, called veins. The arteries brought what should always be pure blood away from the heart; the veins are going to carry the impure blood back to have it purified.

By and by these vessels begin to unite and form larger ones. They take this loaded-down blood back through the different organs which are expected to help make it clean, but if they were not treated with pure blood before, they are lazy now and will not do their work. By and by all of these veins unite in

two large ones, and empty their contents into the right auricle of the heart, and a dirty mess it is you may be sure even at the best, but when the work has not been properly done, owing to the stomach's failure to provide the means, you can imagine what it must be. What becomes of it now that it is back into the pump? Well, the pump works and sends it through a little door into the right ventricle. From there it goes through two large corridors into the lungs to be cleaned of its nastiness by contact with the oxygen of the air. Perhaps now you can see why it is so important to breathe plenty of pure air. But of this more anon.

Purified it goes back into the left auricle, then down into the left ventricle, whence it starts out again on its journey around the body, absorbing as it goes the nourishment which the stomach has been preparing for it from the food taken. If you have followed me carefully, as I trust you have, by this time you must be able to "catch on" to the meaning of my insisting that the stomach must be kept in good order, that the right kind of food must be taken in proper quantities and at proper times, and that it must not be abused in any way. Only so can the proper nourishment be given to the blood to go on its rounds through the body. Only so can you have clear complexions, bright eyes, quick step, a ready brain, and a capacity for happiness.

CHAPTER IX.

SOME PLAIN TRUTHS.

Two men were talking together. The one was a clerical-looking individual, well-dressed, clean-shaved, with thin and cadaverous countenance that looked as if it were a stranger to smiles, eyes sunken deep under overhanging brows, and, taken altogether, a person whose appearance betokened culture and ill-health. He belonged, as I knew, to the ministerial profession. The other was a rollicking-looking fellow, with laughing, kindly eyes, now clouded over with an expression of shame, and with the stamp of the drunkard upon his brow. I knew something of him, too. He had inherited a taste for strong drink. His father and grandfather both died from excesses in this direction, and he came into the world with a diseased appetite.

The minister was talking earnestly of the sin of intemperance, of the misery it caused, how it degraded every noble impulse, how unworthy of true manhood it was to yield to the voice of the tempter, and how with courage and determination he could break away from the chains that bound him, all of which was the exact truth, as the poor man acknowl-

edged in bitter shame. And no doubt he went away, and was drunk ere the day was over.

Probably many of you will be very much shocked when I say as these men stood there I thought that the minister was the most blameworthy of the two. I knew that he had a good appetite and poor digestion, that many articles of food which he insisted upon having upon his table, and not only that, but *would* eat of them, distressed him greatly, in short that he had dyspepsia which was rapidly growing worse, crippling his powers and bidding fair to destroy his usefulness. His sermons were full of the worm that dieth not and the fire that is not quenched. He rarely adverted to the graciousness and goodness of a loving Father, but his theology was gloomy, dark and forbidding. He made his family miserable by his own hardly suppressed irritability, and then posed before them as a martyr, when in reality he was simply a glutton. He would have been shocked to be told that the man he was lecturing was to be pitied far more than he, that his own intemperance in eating was a greater sin in the sight of his Creator than the other's intemperance in drinking, that it was in fact absolutely vicious. This is a plain way of putting the matter, but it is truth.

It is said that Gambetta, who was an intemperate eater, partook of a hearty dinner a week before his death, then got excited in discussion, which, of course, hindered digestion, and brought on the fever again, that was the beginning of the end. Great man as

he was in intellect, he could not resist the pleasure of the table.

Bismarck, one of the greatest, if not *the greatest*, statesman now living, was also devoted to the pleasures of the table, and rapidly losing his health. Already the world began to wonder who would take his place in the political affairs of Europe, for disease had seemingly so stricken this man of strong brain and body that they must soon cease their workings. A new physician, a man who not only understood what was the trouble, but who dared to so put it to Bismarck that his good sense assented to the words, prescribed plainer living, a smaller amount of food, less beer, and more open air exercise, with the beneficial effects the world learns of through the news of his physical improvement.

People sit down day after day and deliberately over-eat, when they know absolutely, or would if they allowed common sense sway, that they cannot possibly digest properly all that they cram in upon their poor, over-taxed stomachs. When these rebel, they apply whip and spur in the shape of some cathartic, and for a while the machinery works again ; but a time comes when some disease, directly traceable, if the truth were known, to over-eating, carries them off, and then it is "a dispensation of Providence." In reality they simply made pigs of themselves and death was the result.

A physician whose practice is largely with chronic invalids, mostly women, told me that ladies of culture

and refinement often came to her for what they called an after-dinner pill, so that they could eat all they wanted and then dispose of their overload. To all advice about temperance and resistance to seductive viands which they knew would harm them, their reply was, "Oh, I cannot help eating these things. It is impossible to see them before me and let them alone." What a confession of weakness! They must stuff for the pleasure of taste and then take a pill to get rid of the "swill," for that best describes the sour mess which, half digested, lies in the stomach and intestines long after the nutrition should have been extracted from it and the waste matter discharged from the system.

The same physician also told me of a patient who complained bitterly that her food would not digest, but that she did not believe it was because she ate too much; there must be some other reason. Questioning her, she confessed to three hearty meals a day and often a lunch before retiring.

"Are you willing to do what I tell you?" asked the Doctor.

"Certainly; I came to ask your advice. Only don't, *don't* tell me to stop eating."

"Go home, and do this without cessation for six hours," said the Doctor, elevating her hand and opening and closing it with a slow contractive sort of movement. The patient looked bewildered.

"I can never do it," she said, "never! I should die of exhaustion."

“And yet this is what you ask of your bowels day after day, month after month, year after year, expecting them to go right along without rebellion, and are astonished that they do not. You are unreasonable.”

You who have followed the process of digestion through can readily see the aptness of the physician's illustration, for this is exactly what is required of the intestines when the stomach is constantly passing into them the food with which it is being incessantly laden. This woman *thought* that she was willing to do a great deal to be well, but when the way was plainly pointed out to her she would not see hers. She had not the cause to doubt, nor had she the philosophy, which the two poor Irishmen had, of whom the story is told of their coming to a guidepost on a wide and desolate plain. It was getting dusk, and the unfenced trails were scarcely distinguishable. “Five miles to Glenairlie,” read one of them, putting his face close to the board. “But which av them goes to Glenairlie, sure?” asked his companion, looking dubiously at the two trails. After a few moments' meditative silence, the first Irishman replied, “We can try wan av thim, and then the other.” “But how will we find the way back, av we get lost?” “Shure, we will take the boord along wid us,” replied the first. And so the two pilgrims lighted their pipes, and marched cheerfully away with the guideboard between them.

Now there can be no rule laid down as to the quantity each individual should eat. In this case, as

in most others, everyone must be a law unto himself. Food that one person can digest with ease lies like lead in the stomach of another. *This is invariable*: Whenever you find digestion becoming disordered, no matter from what cause, the safe way is to diminish the amount taken, until the organs involved can have time to recover tone. All sensible people would give rest to any other part of the body that had been weakened by overwork, a sprain, or a bruise.

As a rule people who take a great deal of exercise in the open air can eat and digest more food than those whose employment is within. That in itself is a hint to dyspeptics.

A very good plan when one finds the stomach is overtaxed is to cut off one meal a day absolutely. Let that be the one you value the least, although, generally speaking, it is better to go without the supper, because then body and mind are apt to be fatigued, and the stomach shares the disinclination and lack of ability to labor. Yet this is not of paramount importance. The thing is to diminish the amount of food to that quantity which can be digested.

If you cannot get along with two meals a day—and it requires some determination, just as it does for a drunkard to give up his cup—then cut down the amount taken at each meal. Resist that pie or pudding, not that they in themselves are crying evils, but that you have eaten enough without them. Let the cake alone for the same reason. Many things

thought indigestible, are so simply because they are piled in on top of a load that is already large enough for the workmen in the stomach and intestines to dispose of.

Of course I do not wish to be understood that all difficulties in digestion are brought on by intemperance in eating. I know there are many, especially delicate women, who are overworked or unhappy, two things which are sure to make trouble in this respect. The only way for such persons is to take the greater care in their eating. The mischief may have been first done by what could not be helped, but its repairing requires temperance and that calls for self-control. This may be hard, especially if you have always gratified the appetite, but when health, happiness and beauty depend upon it, it ought to be possible for every human being. I trust there are few women who have as little government over self as that one, who, disgusting as it may seem, actually formed the habit of eating *ad libitum* and then running her finger down her throat to produce a convulsion which would cause the surplus to be thrown up. One would think the remedy far worse than the disease, but it did not appear so to her. You will be astonished perhaps, when I say that this was actually better, more decent, and far less filthy than to retain it, letting it lie in the stomach and intestines a sour decomposing mass long after its digestion should have been completed. And yet the latter is what nine-tenths of you do, who call yourselves reasonably well.

CHAPTER X:

MORE OF THE SAME SORT.

Do not fancy that having formed the habit of temperance in eating good digestion is absolutely secured, for though you have taken a long step toward it, there are several other things that come into the count of which I must speak. No doubt many of you will be disgusted at the plain way I shall put some things, but remember that they are spoken in the hope of helping some of the many women in the homes of our land who are suffering from ill-health which has crept upon them, they know not how, and which renders life hopeless. A large part of them have sinned, unknowingly perhaps, against the laws of nature, but the consequences are none the less severe. Few, I trust, are like that one who, after days of complete inaction of the digestive organs, sought the advice of her physician. Seeing her entire ignorance, an attempt was made to explain to her why she was in such a condition and how it could be avoided in future. "Oh, doctor," she wailed, "don't tell me these things about myself. I don't want to know them. They make me so *nervous*!" And there she was, a weak, miserable creature, threatened with

chronic invalidism, her beauty and attractiveness rapidly disappearing, unable to attend to her duties at home or elsewhere, and yet she did not *want* to learn the laws of her being, because "it made her nervous." Out upon such criminal folly.

Besides temperance in eating, *regularity* is another essential. We are in all respects the creatures of habit, and every function of our bodies not under the control of the will, has the same peculiarity. Nature has established the law and it is necessary to give her every aid in carrying it out fully. Those of you who have followed the description of the process of digestion will remember that the gastric juice begins its work of change immediately after the food enters the stomach. Some substances yield at once to its power, while others coquet awhile. Now suppose after this work has been going on an hour another mass of matter is tumbled in upon this, which is partly digested, to go through with the same process, don't you think it is rather discouraging to the stomach to have to begin its work all over again before the first task is completed? The fresh food is mixed up with the other, and the workmen must sort out the materials and get them in marching order once more. What wonder if, in this confusion, the completion of the job is delayed way beyond the proper time, and not half done at that. You would be discouraged yourself if, after having a task assigned you, more was added from time to time, and at each addition you had to go back and begin over again. Make

it a rule to eat at regular hours, and never to stuff between meals. Especially should this habit be guarded against with children. "Piecing" does a world of harm that perhaps a life time will not undo.

Many indulgent mothers will exclaim against this advice in regard to children. "Deny these little creatures something to eat when they come in hungry?" they exclaim. "It would be the height of cruelty."

I suppose this charge of cruelty which really has been made, ought to extinguish me, but it does not. Growing children's appetites are craving, and often imperative. Every organ, each tissue in their bodies, are calling not only for new material to repair the waste their constant activity produces, but to build up what is to make the future man or woman. They must have good, nutritious food, and they may need to have it oftener than adults, but let it be given at regular times. When they come rushing in from school half famished, furnish them with a generous slice of bread and butter, or a bowl of bread and milk, and let that suffice until the regular supper hour comes around. Then be firm about not allowing them to eat again before their early bedtime. I do not advise starvation, but temperance and regularity, both absolute essentials for healthy, growing children, as well as for adults.

Another thing about which absolute regularity is a necessity, is in always obeying Nature's call to discharge from the system the refuse part of the food

eaten, and I cannot too strongly impress upon your minds the importance of this thing. Let no false ideas of modesty, let no occupation, however important it may seem, ever cause you to be careless or neglectful about the matter. It is one of the functions of the body whose normal activity is absolutely necessary to the preservation of health, and it is, therefore, nothing to be ashamed of to consider the best means to prevent irregularity. Encouraged by obedience to her calls, Nature will make herself heard at about the same hour every day. Her summons neglected and the time allowed to pass by, she ceases to urge herself so vigorously upon the attention, and the result is the retention in the body of a mass of reeking filth. This is no trifling affair. I speak plainly because a regular habit in this respect is such an absolute necessity, and constipation is so often the result of pure carelessness in this direction. It is cold—it is disagreeable—or one is busy and by and by will do as well, but by and by will *not* do as well. You would, any of you, think it a subject for shame if you needlessly left decomposing, stench-producing matter in one of the rooms of your house, even though the apartment was closed and no harm done except by the poisonous exhalations escaping insensibly through the cracks and crevices. And yet in the body, the temple of the soul, which should be made pure and clean every day, you do this thing. Picture it, think of it. No matter how revolting it may be, remember that every time you neglect to obey Nature's calls, you are retaining in your system to poison the blood—for the little

busy bodies scattered so thickly through the mucous membrane of the intestines are hard at their work of absorption all the time—what you cannot even bear to call to mind.

A young girl once told me she had put Nature off so frequently that she rarely made herself heard oftener than once a week, and “it was so convenient.” Poor creature! It was the sin of ignorance. She did not in the least realize what she was carrying around with her constantly, a burden of filth which was sickening to think of. She did not know that the unsightly pimples scattered thickly over her face, and which were a source of constant mortification to her, were the result of her “convenient” habit, that the poison thus drained into her blood was showing itself in this way, instead of developing into a fever or some other form of active disease. She did not dream that she had destroyed her beauty and was in a fair way to break down her health, that the large intestine distended with what should have been long before disposed of was crowding in upon and displacing other organs, bringing on some one of the forms of disease which sap the energies and destroy the vigor of a great majority of the women of the land. And yet this was true in her case as in that of thousands upon thousands of others similarly conditioned. It might have been so easily prevented, had she known and heeded. Girls, think of this when you are tempted through modesty, or indolence, or carelessness, to disobedience to this one of Nature’s mandates.

I speak to you particularly because it is yet a comparatively easy thing to regulate irregular habits of this kind before irremediable mischief is done. If you have offended Nature by neglect so that she no longer seems to interest herself in the regularity of this function, you may coax her to remembrance again, by pretending to hear her call at her old hour whether she does so or not.

Mothers, yours is the responsibility of teaching your children the importance of attention to regularity in this respect. Health depends upon it, and without health life is of little worth. Begin with them when very small. Tell them in a simple way of the process of digestion, and show them how much depends upon the final act which completes it. Tell them that it is just as filthy to neglect it voluntarily as it would be to dip their hands in nastiness and leave them unwashed. Tell them that it is even worse, because it will permeate the whole body, making it unclean. As you love them, as you value their future health and usefulness, as you hope to see them strong, vigorous, manly men, or fair and beautiful women, teach them to understand the importance of this function.

I have spoken plainly, some perhaps will say indelicately. To such I can only quote the old French saying, "*Honi soit qui mal y pense*," (Evil to him who evil thinks). Those who do, who are like the woman who did not *want* to know about herself, must go their way nursing their false modesty, suffering and enduring to the weary end.

CHAPTER XI.

QUALITY OF FOOD.

What shall we eat? Oh, what is the best?
Which are the things that most easily digest?

That is a hard question to answer. No absolute law can be laid down which will apply to everybody. "One man's meat is another man's poison." To say that all must eat lamb, or all must leave it alone, that butter or cheese, turnips or cabbage, are essential parts of the diet of every human being would be a good deal like dictating to a man the color of the eyes and the shape of the nose of the woman he should marry. Certain general laws there are, of course, which should govern our judgment, but aside from these, nothing can be declared as absolute for all people. Yet the wisest have been led into this error of supposing that their own peculiar physical condition must be the rule in the world and not the exception. For instance, it is related that Pythagoras prohibited the use of beans, and hated them so that he denounced contact even with the shell, or any part of the plant. And we find other extreme examples of a natural distaste for certain kinds of food ruling individuals, but which could not in any way be made a law for general application.

The food has a two-fold duty to perform. It must supply material to keep the heat of the body at its normal height of 100° , allowing it to vary but little either way, and it should replace the tissues that are continually destroyed by labor and exercise. Divided, then, into the two kinds of heat-producing and nutritious—the next question is as to which of these classes different articles belong, and when they should be eaten.

In a general way this can be quickly answered. All kinds of meat, bread, cakes, sweet-meats, in fact everything which people can make out of sugar, fat and flour, contain large amounts of carbon and hydrogen which furnish the fuel to keep the fires burning. Something of these are found in most of the substances we eat, but the larger quantity is contained in these articles, while they are almost wanting in fruit and vegetables. It may readily be seen then that in Winter a much larger supply of starchy and oily matters are needed and can be used than in the Summer, and the inevitable conclusion that common sense would teach us to reach is, that as the warm weather comes on the diet should be regulated accordingly. More vegetables and fruits should be taken in place of the meat and sweet or greasy compounds. Fresh ripe fruit has an especially good effect in reducing the temperature, improving the digestion, and keeping up the tone of the system generally.

Few people realize the necessity of changing the diet with the seasons. When the warm Spring

weather comes they reduce their clothing, but it never occurs to them that there is an excess of heat inside the body as well as outside that needs reduction. They do not understand that when the weather is warm and less heat is needed to preserve the normal temperature of the body, if the same amount of heat-producing food is taken, the extra hydrogen and carbon will be seized upon by the liver, which employs it in the manufacture of bile, and the consequence is an accumulation of that material, more than is needed, ending in an overloading of the organ, and a development of bilious troubles, a torpid liver, etc. And so they go on with the same amount of meat and pies and cake, until by and by the appetite begins to fail, they feel dull and heavy and headache-y—no other word expresses the idea—from the causes mentioned above, and they wonder why Spring always makes them so miserable. If they escape a fit of sickness and grunt languidly on into Summer, it is simply because Nature always does the best she can for her children and fights hard to save them from the consequences of their own folly. Remember this: When the warm weather comes withdrawing the stimulus of the keen, frosty atmosphere, there is always a letting down of the whole system, and a consequent inability, as previously explained, of the organs to do the same amount of work as before. You can readily understand this and draw the inference. Give them less to do. Eat things that will cool instead of heating the blood. Fruits and vegetables

contain a large amount of water, are cooling in their effects, and for that reason much more desirable for Spring and Summer eating.

Nutritious elements necessary for the renewal of destroyed tissues are also found in meat and bread—in the meat in the form of fibrine, in the bread in the form of gluten. Milk and cheese, too, furnish a nutritious element known as casein. This is also contained in peas, beans and other vegetables. Eggs, too, give us albumen, which also exists in the soft parts of vegetables, especially in those like turnips, the roots of which are boiled for food. These substances, fibrine, gluten, casein and albumen are essentially the same, containing a large amount of nitrogen, which is the real restorer of tissue and the supporter of animal life.

Of the meats, mutton, fowls, and beef are the most easily digested, and pork with the greatest difficulty. Persons with weak and slow digestion should, therefore, govern themselves accordingly. Milk is a most excellent article of diet for most people, although some cannot use it at all. Many times the apparent trouble will disappear, if a little lime water, a teaspoonful to a gobletful, is used. And right here I want to say that one of the best things for any one who is exhausted by labor or over-exercise to take, is a glass of milk heated as hot as it can be drunk, being careful that it does not boil. A little salt adds to its digestibility. Many a weary housekeeper will find this a great relief, taken at 11 o'clock, before the

work of getting the noonday meal begins, and it will enable her to get through with that labor without over exhaustion.

It is not best to put a large variety of food into the stomach at one meal. It is often difficult to assimilate it and consequently digestion is retarded. Persons with strong, healthy stomachs may be able to do this with apparent impunity, but dyspeptics or those with weak stomachs and digestive powers cannot. For instance a mixed dinner of meat and vegetables will sometimes be found to produce flatulence, because the starchy matters require the alkaline saliva to dissolve them, and the meat the acid of the gastric. These fluids neutralize each other to a certain extent, and when there is a scanty supply of each the result is a check to their operations.

It would be better, therefore, for even healthy persons to confine their "bill of fare" for a single meal to not more than three or four different articles, and take those together which will, if I may use the expression, harmonize, or be easily assimilated. A little thought will enable you to determine this to some degree. It is easy to see that milk and acid sauces do not like each other, nor do meats and syrups seem to be good company. I have seen people eat a dish of cooked tomatoes, or even cucumbers with vinegar, and then deliberately drink down a glass of milk, with the inevitable effect of souring the whole mess, turning their stomachs into regular swill receptacles. Ugh!! The contradictions which people put into them re-

minds me of the way a Frenchman who had drunk a brandy punch for the first time described it afterwards when he could not think of its name, and wanted the barkeeper to make it for him : "I vill take one grand contradiccion, what you call it? wis very much lemon for make him sour, very much soogare for make him sweet, plenty of brandy for make him strong, and a great deal of wasser for make him weak."

There are many of these things, however, that each individual must determine for himself, and it is very easy with a little self-observation to do this. As said before, no cast-iron law can be laid down. Two things only are invariable. Food must always be the very best of its kind, and it must be well cooked. These are necessities if it is to accomplish its purpose of nourishing the body.

CHAPTER XII.

SOME SUGGESTIONS.

One thing, the importance of which is not generally appreciated, is the use of a great deal of water for drinking between meals. Remember that I say *between* meals. While eating it is better to let all fluids alone. The food should be dissolved by the natural secretions, whose efforts to do their duty is aborted by pouring down a quantity of tea, coffee or water to do their work. If you have followed the process of digestion you can readily understand this. But there is a necessity for a large amount of fluid to be constantly passing through the stomach and intestines. Water is readily digested, and as it goes its winding way, it carries along with it matter which would otherwise linger in its travels. It dissolves and helps digest solid material that the fluids of the system have failed to entirely dispose of, and is one of the most effective means of cleansing the blood. The dyspeptic will find that it will assist greatly in her progress towards recovery if she will drink from five to eight good-sized tumblerfuls a day, and do it until it becomes a habit.

No doubt many of you think I have dwelt a great

while upon this matter of digestion as if it were the most important thing in life. Well, it is. I hold that no human being can be moral and upright in the strictest sense of the words, can do the duties, live the life, compass the possibilities intended by the Creator unless he or she has fairly good digestion. Many there are who pose before their friends as martyrs to poor health who are simply victims to their own appetites, while there are other poor creatures, and these are mostly among women, who have become invalids because they have been overworked, and unable either through ignorance or force of circumstances to obey the simple laws I have mentioned, which would, earlier observed, have kept them in health, and even now will do much towards restoration. And this brings me to another matter, and that is the taking of drugs.

Those of you who are familiar with the Spoopendyke family and their doings will remember the time that Mr. Spoopendyke called upon "that measly woman" to bring him some remedy to wrench him from the grip of that foul fiend, the colic. She could not find it as quickly as he thought she ought, and after he had "dod-gasted" her several times, in his anger he seized his hat and started out, threatening Mrs. Spoopendyke with his death because of her carelessness, but leaving her to congratulate herself from past experience upon his recovery without medicine. In nine cases out of ten it would be well if the ailing individual could be coaxed or angered, as Mr. Spoo-

dyke was, out of the drug which is taken to cure what Nature would remedy if she could be obeyed. It is, of course, a great deal easier to swallow medicine and go on with self-indulgence than to deny oneself, but the relief by the drug is usually but temporary, while the other is permanent.

I do not wish to be understood that absolutely *nothing* should ever be taken to assist Nature, but that the habit should not be formed of depending upon drugs to bring back health when it is lost. Some simple things there are which may be used sometimes with great benefit. In the case of a stomach trouble and poor digestion of long-standing, after attending to the laws I have mentioned, the following can be employed often to great advantage:—

Fifteen grains of extract of nux vomica, 30 grs. ex. taraxacum ; $1\frac{1}{2}$ drs. aloes. Mix thoroughly and make into eighty pills. Of course half the quantity of ingredients can be used and only forty pills made. In such cases, as I mentioned above, take one of these every night, or every other night, as may seem necessary. They are not cathartic pills but gently stimulate the stomach to action and leave no ill effects behind them. Let those with weak digestion try them, but on no account neglect one single precaution given in other directions. Those must be attended to, in addition to other things in the way of bathing and exercise, which I shall give by and by, in order to secure permanent benefit. If my constant repetition of this necessity grows tire-

some, let my excuse be the importance of the subject.

Another excellent thing for the same purpose, especially for old people, but good for anyone to stimulate weak digestion, is this: $\frac{1}{2}$ lb. best raisins; $\frac{1}{2}$ lb. figs; 1 oz. senna leaves. Chop fine and thoroughly mix. Pack away in a bowl or jelly tumblers, and take a piece an inch square upon going to bed. You can soon regulate the size of the piece by your needs.

A tonic pill, which will be found of great benefit in the case of any tendency to dumb-ague, or where there is a lack of strength, is the following: 20 grs. sulphate of quinine, 20 grs. pulverized rhubarb, 6 grs. capsicum. Mix and make into forty pills. Take one or three of these per day, as the case may require, a half hour before a meal. It is better to drink hot water or lemonade with them, that they may be soluble in the stomach.

One of the most important things for persons with dyspeptic difficulties to do is to keep their stomachs warm. A lack of the required heat often prevents perfect action. All such people will recall times when they actually felt a decided chill at their stomachs, or across their backs just opposite this organ, and every change of temperature seemed to affect their digestion. Much of this trouble, if not all, may be avoided by wearing a double allowance of flannel around the body over the stomach.

Another thing which often produces very good

results is the drinking of a tumbler of water, as hot as can be taken comfortably a half hour or an hour before eating. This raises the temperature of the stomach and puts it into a good condition to digest the food soon to be taken. A little salt added is a good thing. This latter has been found an efficient remedy for sick headache, if taken in its early stages.

Right here let me say, that people with weak stomachs sometimes find it difficult to drink as much water as I recommended at the beginning of this chapter, because it seems to depress the stomach and hinder its functions, sometimes causing absolute distress. When that is the case let them substitute hot water. That is good at any time to stimulate the action of the bowels and of the kidneys. If taken just before retiring at night it promotes sleep. It would be well for persons with organic disease of the heart to be cautious in its use, and any one with ulcers in the stomach had better take it cold. There are also some kinds of dyspepsia in which it causes pain, but persons can very soon tell whether it is a benefit. The great majority will find that it does them good. Do not drink it rapidly, but sip it gradually.

These directions are not for people who are very weak from some wasting disease, and the vital powers low. In that case it might increase the debility to take a great deal of hot water.

The following is excellent in the case of the collection of gases upon the stomach. Divide a tea-

spoonful of Rochelle or Epsom salts into four parts. Take one part in hot water before breakfast, another at 11 o'clock, a third about 4 in the afternoon, and the fourth before going to bed. This is not enough to give any cathartic action, but it seems to stop decomposition, and hasten digestion. It is a simple remedy, and good for dyspeptics of all ages, but old people will find it of especial benefit.

I have already spoken about the eating of fruit, particularly in Summer. I want to add that at all seasons of the year this is a most excellent variety in the food and greatly aids digestion, particularly if taken in the morning before breakfast. Dyspeptics cannot always eat apples with comfort, as they are too cold and seem to lie hard on the stomach, but the juice of an orange can disturb no one. If apples are eaten, it is best to take off the skin and then take them very slowly.

There is one thing it may be well to speak of right here before closing this matter of eating. All the rules laid down may be faithfully carried out, and yet fail of their perfect work, if the food is taken under a cloud. The influence of the mind upon digestion is wonderful. Any violent emotion, such as anger, fear, or grief, during a meal or immediately after, will put an absolute stop to the process. The utmost care should then be taken to have all of the surroundings in the dining room as bright and pleasant as possible. Make the endeavor to put away all care and anxiety. Banish thoughts of business and

work, and set yourselves to having a good time. Be as merry as possible. The more stories told, the more laughter and pleasant conversation, the greater likelihood that what you eat will be digested. Then take plenty of time. Dr. Edwards, in his book, "How We Ought To Live," tells of a man who would always keep one hour for his dinner, no matter what the press of business might be. This was an invariable rule, and he would not allow it to be broken in upon. He thought that what was lost in one way would be amply made up in health and length of life. And no doubt it was.

Solitary meals are not worth half as much to an individual as those eaten with others. There is one exception. Some people seem to imagine that the table is the place to bring up all the unpleasant happenings of the day. If they have been perplexed or feel irritable, the meal times, when the family is gathered together and there is no escape, are the golden opportunities to work off their ill feelings in cross words and fault-finding. If the sensibilities of the growler or fretter are so blunted as to permit them to eat on tranquilly, everybody else is made uncomfortable and the food fails to do its proper work. If such an individual is around, better wait and eat alone, when you can be at least tranquil. To wish that the food which he is eating might strangle him while he growls is no great sin, I fancy, for he often effectually strangles all happiness at the table, and therefore hinders digestion, and thus in-

dures the health of his family. I use the masculine pronoun, for the "growler" is generally the man of the house, while the "fretter" is the woman. And as I am talking principally to women I say, don't fret at the table. No matter how tired you are, how nervous and wearied, how beyond bearing seem your annoyances, when meal time comes put it all out of sight. For your own sake no less than for that of your loved ones forget as far as possible that life is not what you dreamed it in the sunny days of your youth. Let breakfast, dinner and supper find you bright and cheerful, if you can be so at no other time during the day.

CHAPTER XIII.

ANOTHER FORM OF POOR DIGESTION.

No one ever saw two persons exactly alike in person, manners, mental or moral natures, and what may be true of one individual under certain circumstances, will be utterly untrue of another surrounded apparently by the same conditions. Nor can we ever predicate exactly what any one *will* do from what he *has done*. This week he believes one way with all the strength of his nature; next week things may have changed so utterly with him that his state of mind is exactly the opposite, though he thinks just as enthusiastically as before, and this too without being particularly fickle or changeable.

What is true of the mental nature is also true of the physical. No one is made up exactly like his neighbor, no matter how much outwardly they may resemble each the other. The same causes may not produce the same effects; disobedience to the laws of health will bring one kind of trouble to one, and something entirely different to another. And this brings me to what I want to talk about.

Over eating, lack of proper exercise, impure air, and a general neglect of hygienic rules produce in the

great majority of people a confirmed indigestion, showing itself by constipation, a complete tying up of the bowels, it seems to be, so that they refuse to act. I have told you how to coax them into obedience when this is the case, but there is an opposite condition of which I have not spoken. I allude to chronic diarrhea, when digestion appears to proceed too rapidly. Sometimes this state of the body comes on very slowly and stealthily, not causing any alarm at first, but rather being looked upon as a good thing to cleanse the system. By and by it shows that it has come to stay, and a most troublesome guest it is. Again an acute attack of diarrhea produced by a sudden cold or over-eating takes a chronic form, and is difficult to get rid of. In either case the same conditions are present, and the same causes have operated to produce them, although working in a little different manner. I wonder if I can explain to you just what these conditions are.

You remember I told you farther back when speaking of the process of digestion, that there were glands in the stomach and intestinal canal which secrete fluids that are necessary for the changing and assimilation of the food. In perfect health just enough of these are furnished to carry forward the work they were intended to perform. And they do this well, so long as the food comes along properly prepared, but when it does not, they are a good deal like people with healthy appetites who sit down to the table and find their meals spoiled by poor cooking—they show

that they have a temper. Not always at once, however, but when, day after day, a sour "mess" is sent on its way these glands become outraged, and usually refuse to act without a great deal of coaxing. This is the case in constipation. The secretions have failed and digestion cannot proceed.

Sometimes, however, instead of showing their resentment in this way, they set to work with a vengeance and pour out their fluids too plentifully, and the mass of half-digested, sour decomposing food is rushed along the intestinal track with such speed that Nature's purposes cannot be carried out. The fluids are abnormal, both in quantity and quality, and when this exalted condition continues until it becomes a habit, it is a chronic diarrhea. You can readily understand then the difference between this disturbance in the system and constipation. In the one case the glands refuse to act; in the other they do too much, and both states proceed from about the same causes.

In diarrhea, either chronic or acute, people are apt to depend largely for cure upon drugs, such as opium, calomel, mercury, etc., which merely serve to paralyze the action of the bowels for the time but does not reach the real trouble. Just as soon as the effects of the drug passes away Nature asserts herself and endeavors to throw off the poison from the system in her own way, only to be checked again by another paralyzing dose. Now, I want to say most emphatically here, that drugs cannot reach and cure

chronic diarrhea, which is what I am now especially speaking of.

"Well, what shall we do?" asks some poor victim. "The same rules will not apply to me as to those you have been talking about farther back."

Some of them will. Regularity in eating is very essential. Take nothing between meals. Eat slowly; masticate thoroughly. Diminish the quantity of food. Dr. Oswald advises an entire fast for a day or two, but unless in an extreme case, I think the trouble may be controlled by taking a very small quantity twice a day, omitting the third meal, until the habit of frequent discharges is broken. A perfect fast might perhaps hasten this state of things. Dr. Oswald gives as the reason for entire abstinence that "either the quality or the excessive quantity of the ingested food calls for abnormal means of evacuation." It is easy to see then that the withdrawal of the cause would bring about recovery.

The principal difference in treatment lies in the kind of food to be taken. All sloppy articles must be avoided. No soups can be allowed. No tea nor coffee, nor any drink whatever can be indulged in when eating. The food, consisting principally of meats, any kind that is liked, and bread and butter, must be taken dry. Raw fruit is to be religiously let alone. Acids are not good. For all of these things that are easily acted upon by the fluids of the stomach and bowels, others that are difficult of digestion must be substituted—the articles that contain a large amount of nutrition in a small compass.

One exception to taking food between meals can be made in the case of boiled milk. A little two or three times a day is found to be excellent. It is very nutritious and, as everybody knows, it is what is called binding.

Besides this care about the quality and quantity of food, a strong and effective agent for producing a cure is active exercise in the open air. I know that people usually feel that they must keep perfectly quiet with such troubles, but it is not true. The exercise is necessary to give strength to the bowels to retain the half-digested and non-assimilated food until some good can be derived from it. The assertion is made that soldiers encamped in an orchard country where ripe fruit is plenty, will be greatly affected with diarrhea, but the first forced march they take the difficulty all disappears. Of course some judgment must be used in the beginning, not to proceed to the limit of exhaustion, but do not be afraid to exercise.

As I said before, drugs are not needed to bring about a cure. Some simple little remedies may do good. Powdered charcoal, as much as can be heaped upon a three cent piece, or about a quarter of a teaspoonful taken three times a day, a half hour before the meals, is excellent. This can be put upon the tongue dry and swallowed, but a much better way is to mix it in a teaspoonful of glycerine. The stomach is in an irritated condition and this is very soothing, besides being a perfect disinfectant.

I spoke of using boiled milk. A very good thing to add is to grate into it a little nutmeg or any of the spices that are agreeable. Indeed teas made of the latter are excellent to warm the stomach, but no more than a third of a cup should be taken at a time.

Every other night before going to bed rub the abdomen with olive oil. It will be a protection against catching cold, and this is the great thing to be feared in the low state of the system produced by chronic diarrhea. Anything that will fortify the body against cold is excellent. For the same reason rubbing the body frequently with a towel wrung out of salt water and dried—a thing to be spoken of elsewhere—is a most desirable thing to do, as it produces activity of the skin. One of the marked effects of this trouble is the dry, leathery-looking cuticle, and such rubbing will do much towards changing it. In fact this alone will sometimes stop a diarrhea.

So much for chronic trouble of this kind. Of course I am speaking particularly of those who are not confined to their beds, or who have not entered into that malignant stage of the disease which seems to demand more heroic measures. But even these may derive great benefit from this mode of treatment and their lives are frequently saved.

Dr. Oswald, who is a fighting enemy of all drugs, and a most sensible advocate of Nature's cures, gives a method of proceeding with persons who have been brought to Death's door by the continued use of as-

tringent poisons to check diarrhea, which I think I cannot do better than to reproduce here :—

“The first condition of recovery is the peremptory *abolition of the poison-outrage*. For the first three days prescribe nothing but *sweetened rice-water*, and only tablespoonful doses of that; give the stomach a sorely-needed chance of rest. On the fourth and fifth day add a few drops of *milk*, and toward the end of the week inspissate the broth to the consistency of gruel. There are persons with whom milk disagrees in all its forms; for such prepare a surrogate of *whipped eggs* with sugar and warm water—a tablespoonful every half-hour. Do not hope that the stomach of a far-gone drug martyr will at once tolerate even such feather-weight burdens; it will not repel them with the spasmodic violence that characterized its reactions against a virulent nostrum, but it will often protest its disability to retain the whole quantum. A small but increasing percentage will be assimilated, and, if the corresponding enlargement of the rations is not overdone, the patient, at the end of the third or fourth week, may be rewarded by the return of something like positive appetite, *i. e.*, a craving for more solid food. Try a slice of rice pudding and fruit jelly, or a homœopathic dose of blanc mange. Try a soft-boiled egg or a baked apple. Eschew cordials. Avoid food extracts, even strong beef tea, which for a person in such circumstances is a stimulant rather than a nourishment. In the meantime watch the weather, and on the first clear day screen the lower windows, open the upper

sashes, and treat the patient to a *sun-bath*. Sunlight, applied for half an hour to the bare skin, is a better tonic than cold water, which invigorates a healthy man, but exhausts an æsthenic invalid. In the form of *tepid sponge baths*, however, water should be applied as soon as the patient can bear the fatigue of keeping on his legs for a couple of minutes. The first decided gain in strength employ in the preparatory exercises of *pedestrianism*. Carpet the room, clear a track for a circular walk, provide supports at proper intervals, a small table in one corner, a chair or a curtain strap in the other. Interest the patient in his progressive achievements, keep a record book, procure a boxful of chips and tally off each round. Three miles a day mark the time when the sanitarium can be transferred to the out-door world. In a vineyard country devote the vintage season to a three weeks' *grape-cure*. The cure consists in dining on bucketfuls of ripe grapes and transparent slices of wheat bread. Grape breakfasts, grape luncheons and grape suppers, *ad libitum*, but no bread, nor anything else that could interfere with the system-renovating effect of the sweet abstersive, that has been tried with signal success in the treatment of bilious dyspepsia, gout and cutaneous diseases. Extreme caution in the use of animal food, acids and fermented beverages, for the first six months at least, is as necessary as after an attack of *dysentery*, which should be similarly treated, except that a more rapid recovery of strength will permit a speedier return to out-door and active exercises."

CHAPTER XIV.

WHAT EXERCISE WILL DO.

One of the earliest recollections of my school days is of the line standing at the head of a page in my copy book, "Exercise and Temperance Strengthen the Constitution." Writing it over and over again, it naturally fixed itself in my memory, recurring pertinaciously even before I became conscious that it really expressed a vital truth that should govern our living.

In a general way everybody knows that physical exercise is a good thing, that it helps to make human beings strong and vigorous, but while acknowledging this, nine persons out of ten do not act upon the knowledge. Other things are allowed to take the time which should be devoted to this duty—for duty it is, and a very important one—the digestion becomes disordered, the appetite impaired, and a general lack of nervous energy shows that the tone of the system is much lower than it should be. A few hours of exercise in the open air will often cause bad symptoms to disappear, and persevered in do much to restore the health generally,

A few words as to the philosophy of exercise.

You have already learned that the object of taking food is to obtain material to keep up the strength of the body by replacing the waste which is constantly going on, and to preserve the normal temperature by supplying heat. The blood absorbs the nutritive particles and carries them along through the circulation, depositing them in the tissues in every part that it visits. But the whole volume must first be brought in contact with the air which is breathed into the lungs, in order that the oxygen may burn out the carbon or heating elements of the food and tissues, which it does, and the resulting carbonic acid passes out of the body, leaving the purified blood to go on its circuit and do the work before mentioned. Now the faster the blood can be brought in a natural and even way to the lungs, cleaned out, and sent by the heart galloping to every tissue, the swifter the growth in strength. I wonder if I am clearly understood. To repeat. The physiological effects of exercise are two ; it increases the breathing power, rids us of carbonic acid, and thus purifies the blood ; it increases the action of the heart, thus quickening the vital processes throughout the whole body, renewing the tissues and carrying off their waste particles. As may be readily understood, this quickened action *must* improve the digestion and therefore the appetite, because the call for the food products is more imperative.

When the body is not properly exercised the blood moves sluggishly, waste particles remain to

clog up the system, the carbon is not burned up and taken away, and the result is what we see, especially among women, in almost every home in the land. The muddy complexion which causes many an otherwise pretty woman a heart pang, is due to impurity of blood. Let her go out of doors every day, walk or run, anything that will bring the muscles into easy play, and my word for it the skin will begin to clear, the eye to brighten, and life become altogether more desirable. Mind I say *every* day. Make a regular thing of it. I have known women to have a spasm of walking for exercise. They would go out once and walk until ready to drop down in their tracks, return home utterly exhausted, and then stay in the house for weeks, groaning over their conviction that walking may be a good thing for some folks, but not for them. It always makes them sick. Of course it does. It is like taking a piece of delicate machinery, grown rusty by disuse, and setting it going at its utmost speed, without cleaning or oiling, the inevitable consequence being a break down.

In this, as in other things in the physical well being, habit is everything. Go out every day *regularly*, taking a short walk at first, but gradually increasing the length. Never continue until exhausted for that destroys all the good effect. Walk leisurely, always, if possible, with some end in view beside the exercise itself, and with a pleasant, congenial companion. Breathe in all of God's free, pure air that you can take into your lungs. Walking is excellent

because it brings into play so many *muscles* of the body. Custom will not allow women walking in the streets of a city to swing her arms—the more's the pity—but in the country there are none to molest or make you afraid, so swing them around till the blood rushes madly out to your very finger tips.

Already I hear the mournful cry, “all that is very well, but by the time I get through my work I have no strength or energy left for going out walking. I must rest.” I know it my friends. I know that by the time the washing, ironing, baking, scrubbing, cooking and sweeping are done, you feel as if every bone in your body were aching, and the winding path through field and forest, or adown shadowed ways, has no fascination for you. But haven't you done all or most of this work in close rooms? How many times through the day have you thrown doors and windows open to change the air? How often do you suppose you have breathed what was in the house over and over again, breathed it all the faster because you were actively working? You would not have been half so tired if you had been supplied with all the fresh air your lungs called for. If, indeed, you cannot go out and walk, then see to it that you do your work in rooms that are thoroughly ventilated. Any kind of exercise, even if not so agreeable, if taken properly, is better than none at all. In your case it is the excess of it under unfavorable conditions that does the mischief.

I want to caution you again about violent, unac-

customed, and prolonged exertions. This is often the great trouble with men who go off from their business for a vacation, or women who become waked up to the necessity of out-door exercise. It increases the action of the lungs and heart so suddenly that they do not have time to get used to the new conditions, and the result is injurious, sometimes laying the foundation of a fatal disease. Use your judgment in this as in everything else. Measure your own strength and endurance and govern yourself accordingly. But *stay out in the open air* every minute that your duties will allow, so long as you find it pleasant. Do not mind dampness and rain if you are reasonably well, but dress accordingly and walk as usual. Those of you who have the ground and the opportunity will find the cultivation of a garden one of the best promoters of health possible, because it keeps you out of doors, and the mind is interested in the work. Anyone who likes to see things grow, to watch the outspringing of leaves, the birth of buds, the opening of flowers will find here a never ending delight, besides the fresh air so needful for health and the vigor of the body.

So much for out of door exercise. I might multiply words indefinitely but it would all tend in the same direction and I think there is no need. My only object is to urge you not to let your blood get full of hideous impurity, not to retain waste matter in your bodies that should be thrown off and allowed to pass away, not to breathe over and over again air

whose vitality is completely exhausted, not to shut yourselves up in close rooms afraid of every whiff of fresh air, while you are taking in the rankest poison. If you suddenly discovered that you were drinking every day in your tea or coffee something that in a few short weeks would terminate your life, how long would you be in deciding to give up those beverages? You would look at filthy water with horror at the idea of drinking it, and probably suffer a long time with thirst, before admitting the possibility of swallowing it, yet you breathe foul air day after day which is quite as vile and even more fatal than either poison mentioned.

It is declared by many physicians that the best, if not the only cure of consumption, is life in the open air, not a partial one, but the whole time spent out of doors, absolutely free from the vitiated atmosphere of close, illy-ventilated rooms. Throw away drugs that have shortened the lives of more people than absolute disease has killed, live day and night in the open air, and a cure is possible for those who seem very near to death with this dreaded scourge. Give Nature half a chance and she will do the work well.

The same is true of catarrh, that pest of the temperate regions of the United States from the Atlantic to the Pacific. More can be done towards recovery from the latter by exercise in the open air, by temperance in eating and living in all respects, than by all the medicines that were ever bottled and

taken by a hopeful people. A douche of some simple thing may be a help by washing off the affected parts, and right here I will give one which has proved unusually successful. And I want to say that I recommend nothing in this book which has not been tried over and over again and received the approval of intelligent practicing physicians:—

Put from 15 to 20 drops of carbolic acid in a vial. Add a piece of camphor gum the size of a large pea. When this is dissolved pour the solution in a quart bottle full of pure, soft water, in which has been put a dessert spoonful of fine table salt. Use this as a douche, warm, a half pint at a time, once every morning upon rising.

Another excellent thing for a catarrh which makes its presence known by clear water streaming from the nostrils and eyes, is a snuff made in this way: Two grains of finely powdered camphor gum thoroughly mixed with four times the quantity (not four times the weight) of finely powdered sugar. When one of the sneezing spells comes on with the running water, a little of this snuffed into the nose will often stop it entirely. Borax is sometimes substituted for the camphor, but in that case the borax and sugar are mixed in equal quantities.

The frequent inhalation of turpentine is also highly recommended for catarrh.

CHAPTER XV.

INDOOR EXERCISE.

Every woman longs to be beautiful. Nine out of ten would sacrifice much of what is valuable in her eyes could she gain for herself those charms of person that win the admiration of all with whom she is associated, that make even little children feel that she is pleasant to look upon, that will give her the power over men which nothing else can. They will sacrifice much, I said, but they will not recognize the fact that one great element of this personal beauty is HEALTH, and that this lies largely in their own hands.

"Mamma," whispered a little fellow confidentially, "I think God forgot something when He made Aunt Mab. She walks as if she was going to fly in a minit, only she hasn't got wings. Don't you 'spose if she prayed, He'd make them sprout now?"

This was simply a boyish expression of his perception of the extreme grace of movement that characterized his Aunt Mab. Perfectly formed, well developed, with a light springing step that speaks of vigor, she is indeed an embodiment of what may be called harmony in motion.

Much of this grace, as I happen to know, is due

not only to regular walking and riding in the open air, but to a persistent course of gymnastics in the house. They were exercises that developed all parts of the body equally, never violent, without strain, but bringing into play each muscle in its turn until all grew evenly and harmoniously, and made the awkward, angular girl that I knew her first, to develop into the beautiful woman whose form and movements are the delight of everybody who sees her.

It needs only a little thought to be convinced that walking simply develops the lower limbs, though it puts in some degree of motion every part of the body. Something more is needed, and that something may be supplied by a course of gymnastics at home. Now do not at once say this is impossible. You cannot spend the time, nor can you purchase the requisite apparatus. You *can* spare 15 minutes on rising and fifteen on going to bed, (a half hour is better), if you will only think so, and you need not buy a cent's worth of apparatus. Of course there are some simple contrivances, which might add to the benefit and variety of your exercises, but if you will carefully follow out the simple series that I will describe to you, going through with them night and morning, you will do much towards accomplishing their object, which is to strengthen and develop all parts of the body, give muscular activity, and help in securing healthy life.

A very necessary thing to start with is plenty of fresh, pure air in the room where you exercise. It should not be too warm; a temperature of 55° is

high enough for the average individual, since the effect will be to increase the animal heat. Then when clothed simply in your woollen undergarments, or without any so as to take an air bath at the same time, and that your movements may be absolutely unfettered, go through with the following:—

The first thing is to take a good position. Stand perfectly erect, the knees straight, heels close together, toes turned outward so that the feet form the sides of a right angle, shoulders thrown back and arms hanging loosely at the side. Now you are in a natural, easy position to begin work. I wonder how many of you standing thus could be examined by a physician and pronounced even fair specimens of physical development, how many have straight spines, even shoulders, equal sized hips, how many legs that are not curved, knees that do not knock together, shoulder blades that do not project unequally. Very few, I fear, even among the young girls, but never mind. With care and perseverance most of those things can be largely remedied. Now you are in place to proceed:—

1. Raise the arms to a horizontal position, palms towards each other, which bring together; throw hands backward as far as you can, making it your aim to come as nearly as possible to touching them back to back, then forward again. Repeat this fifteen times. Be careful not to jerk the shoulders in the backward movement, but move slowly at first, gradually increasing the swing.

2. Place the arms again in a horizontal position on a level with the shoulders, the back of the hands upward; then, with the wrists held as stiff as possible, turn the palms upwards, then downward, and continue this motion, sometimes with hands open, sometimes clenched, until you have twisted them ten times.

3. With clenched fists, throw the lower part of the arms to the shoulders so that the fists nearly touch them, then let them fall back to the side. Bring them again to the shoulders raise the whole arm perpendicularly up, then lower them to the shoulders, thence to the side again. Repeat these movements twelve times.

4. Raise the arms again even with the shoulders, outstretched horizontally, then keeping the elbows as rigid as possible, swing first one, then the other, and finally both, from the shoulder, making the hands describe as near a perfect circle as possible. Swing each arm separately ten times and both together another ten. Let the movement be slow at first, gradually increasing the rapidity.

These are the exercises for the benefit of the arm principally. Many more are given, but the above are sufficient for our purpose if persevered in. Now rest a moment and then begin the trunk exercises.

1. Take the position described in starting. Raise both shoulders as high and forcibly as possible, but let them return gently to the first position so as not to jar the head. Then raise the shoulders alternately,

keeping the arms straight. Next draw one back and then the other, and finally combine these motions so that the shoulders describe a circle. Repeat each of these movements ten times.

2. Turn the body to the right and left without moving the hips, keeping the legs perfectly straight and the hands resting upon the hips. Repeat twelve times.

3. Bend the body from the hips to the top of the head slowly forward until it forms a right angle with the legs, which must be kept perfectly straight; then bring it slowly back again to an erect position. Increase the rapidity and stress of this movement, which should be repeated twelve times. Bend the trunk of the body to the right and left alternately ten times, and finally throw it backward as far as possible without straining. These motions following each other give a circular movement to the body, bringing into play the muscles of the abdomen and back.

4. Lie down flat upon the floor or upon the bed with the arms laid straight by the side, then without changing in the least the position of the legs and feet, raise the trunk slowly to a sitting posture. After a moment's rest, drop back again to a recumbent position and repeat. At first it may be impossible to do this, but by putting the feet against some firm object, or a pillow under the head, it can finally be done, and after a while without this aid. A variation of this exercise is to lie flat upon the back and raise the hips up as far as possible without bending the

legs. These movements must be repeated according to the strength of the individual. The latter are particularly for the strengthening of the abdominal muscles and are especially necessary for women.

The next are the leg exercises.

1. Start with the erect position as at first. Then sink down until nearly sitting upon the floor, draw yourself up again and repeat ten times.

2. Lie down upon the bed and raise one leg up perpendicularly, then the other, then both. Repeat.

3. Lying straight, draw the legs up close to the body by bending the knees, then throw them down again. Repeat ten times.

4. Move the right leg laterally from the left and *vice versa*. Repeat.

Head exercises:

1. Bend the head forward and then backward gently several times.

2. Move it sideways, first one way and then another.

Finally finish these exercises, and I should have said begin them all also, by taking from ten to twelve long, full, but *slow* inspirations of air, breathing and exhaling through the nostrils. Do not hold the breath at any time while exercising, but respire naturally.

I have given the number of times to repeat each movement. This is not arbitrary. It is merely to furnish some guide to what ordinary people should do to get full benefit of the exercise. But as I have

said before about other things, each person must be a law unto himself. Never proceed to the limits of exhaustion. If you can only go through each one once, never mind. By and by you will be able to take the whole, and without ever being tired. You should think it would be a good thing to get very tired, do you say? I can, I think, soon convince you of the evils of over-fatigue. Every movement which you make, no matter how simple it may be, uses up some of the particles of matter in that portion of the body put in motion. This waste is made up from the blood which the heart sends rushing through the arteries all over the system. Now if called upon for a moderate increase of action it readily responds and then recovers itself afterwards, but if you make excessive demands upon its good nature, while it does not refuse to do the hard work when well and strong, it soon loses its strength, and heart disease is then the result. Ambitious people of a nervous temperament are those most likely to do themselves harm in this way.

Exhaustion is therefore always injurious, and this is why I caution you to be careful not to overtax yourself in taking physical exercise either in the house or out of doors.

A word right here about one thing which people are very apt to do, especially the young. Never run up a long flight of stairs. You may do it with impunity for a time, but the day of reckoning will surely come. You send the blood with a rush to the

heart and lungs, you force the delicate valves open and shut just as you bang the doors when in a hurry, and by and by some day when you least expect it, the hinges will break, the valves or doors—for that is what they are—will not work as they should, and the blood will flow back where it ought not, and the result is disease, not only of the heart, but frequently of some other vital organ to which pure blood has not been supplied, and the result is often fatal.

Remember this. If you want to live to be old, if you would have health without which no life can be rounded out to real symmetry, if you would enjoy each day [as it passes, in a calm, equable, and satisfactory way until you are ready to pass from the seen into the unseen, you must see to it that every part of the body is exercised in turn moderately but sufficiently for its full development and to keep it in a vigorous condition. At the same time avoid abrupt and violent movements, or a repetition of anything that will produce exhaustion.

CHAPTER XVI.

ABOUT YOUR GIRLS.

I feel moved to stop right here and talk to mothers about their girls, for I sincerely believe that much of the ill health of women in the past and present, their early breaking down under maternity, has been due to their defective physical education, or, rather, to the fact that they had none at all. Why should they be any less healthy than boys? Why should they give way so easily under what Nature imposes upon them, just as she imposes budding, blossoming and fruitage upon the vegetable world? You may be sure that there is something radically wrong when life, either animal or vegetable, fails under the functions which kind Mother Nature ordained for it.

If you will stop and think of it you will remember, the most of you, that from the time you first began to run around, a difference was made between you and your brothers in the matter of play. No matter what the weather might be, whether it rained or the wind blew, whether it was cold or warm, they might go out and run and race to their hearts' content. They could climb trees, hunt birds' nests, build bonfires, play ball—in short, do a hundred and one things under the blue sky with the free air of heaven passing

into their lungs to purify the blood that was sent merrily gallôping through them by exercise, while you sat in the house playing with your dolls and making its clothes, possibly, and even probably, in a warm room, the air of which had been breathed over and over again. If you chanced to get out and take a good romp with the boys you were reprovèd for being a "tomboy" and made to feel as if you had broken half of the ten commandments. I well remember one of the severest scoldings I ever received was from an aunt who saw me, a mite of a girl, flying around after a cow whose caudal appendage I had seized and hung on to for dear life, while the animal, frightened at this unusual addition to her bodily possessions, made greater speed than ever before in all of her bovine life. Of course, it was not the right thing for me to do, and I needed reproof but not one word was said about the danger I was in from the cow's lively heels, not a syllable in regard to the effect such a fright and run would have upon the animal herself, but the whole sum of my offending lay in the fact of my being a girl—as if I could help that—and my conduct hoydenish.

Very likely you are making the same difference between your boys and girls under the mistaken idea that to have the latter grow up modest and womanly you must repress their natural instincts which prompts them to love out-of-door sports just as your boys do. Very likely you tell them that they must not run and shout, leap and climb as do their

brothers because they are girls, and that sort of thing will make them rough and rude.

Herbert Spencer, in his work upon "Education" tells of two schools both within view of his home, one for boys, the other an "Establishment for Young Ladies." In the one case nearly the whole of a large garden is turned into an open, gravelled space, affording ample scope for games, and supplied with poles and horizontal bars for gymnastic exercises. He says:

"Every day before breakfast, again towards eleven o'clock, again at mid-day, again in the afternoon, and once more after school is over, the neighborhood is awakened by a chorus of shouts and laughter as the boys rush out to play; and for as long as they remain, both eyes and ears give proof that they are absorbed in that enjoyable activity which makes the pulse bound and ensures the healthful activity of every organ. How unlike is the picture offered by the 'Establishment for Young Ladies!' Until the fact was pointed out, we actually did not know that we had a girl's school so close to us as the school for boys. The garden, equally large with the other, affords no sign whatever of any provision for juvenile recreation; but is entirely laid out with prim grass-plots, gravel-walks, shrubs and flowers, after the usual suburban style. During five months we have not once had our attention drawn to the premises by a shout or a laugh. Occasionally girls may be observed sauntering along the paths with their lesson-

books in their hands, or else walking arm-in-arm. Once, indeed, we saw one chase another round the garden; but, with this exception, nothing like vigorous exertion has been visible.

“Why this astonishing difference? Is it that the constitution of a girl differs so entirely from that of a boy as not to need these active exercises? Is it that a girl has none of the promptings to vociferous play by which boys are impelled? Or is it that, while in boys these promptings are to be regarded as securing that bodily activity without which there cannot be adequate development, to their sisters nature has given them for no purpose whatever—unless it be for the vexation of school mistresses? Perhaps, however, we mistake the aim of those who train the gentler sex. We have a vague suspicion that to produce a robust physique is thought undesirable; that rude health and abundant vigor are considered somewhat plebeian; that a certain delicacy, a strength not competent to more than a mile or two’s walk, an appetite fastidious and easily satisfied, joined with that timidity which commonly accompanies feebleness, are held more lady-like. We do not expect that any would distinctly avow this; but we fancy the governess-mind is haunted by an ideal young lady bearing not a little resemblance to this type. If so, it must be admitted that the established system is admirably calculated to realize this ideal. But to suppose that such is the ideal of the opposite sex is a profound mistake. That men are not commonly

drawn towards masculine women is doubtless true. That such relative weakness as calls for the protection of superior strength is an element of attraction, we quite admit. But the difference to which the feelings thus respond is the natural, pre-established difference, which will assert itself without artificial appliances. And when, by artificial appliances, the degree of this difference is increased, it becomes an element of repulsion rather than attraction.

"Then girls should be allowed to run wild—to become as rude as boys, and grow up into romps and hoydens!" exclaims some defender of the proprieties. This, we presume, is the ever-present dread of school-mistresses. It appears, on inquiry, that at "Establishments for Young Ladies" noisy play like that daily indulged in by boys, is a punishable offense; and it is to be inferred that this noisy play is forbidden, lest unlady-like habits should be formed. The fear is quite groundless, however. For if the sportive activity allowed the boys does not prevent them from growing up into gentlemen, why should a like sportive activity allowed the girls prevent them from growing up into ladies? Rough as may have been their accustomed play-ground frolics, youths who have left school do not indulge in leapfrog in the street, or marbles in the drawing-room. Abandoning their jackets, they abandon at the same time boyish games, and display an anxiety—often a ludicrous anxiety—to avoid whatever is not manly. If now, on arriving at the due age, this feeling of

masculine dignity puts so efficient a restraint on the romping sports of boyhood, will not the feeling of feminine modesty, gradually strengthening as maturity is approached, put an efficient restraint on the like sports of girlhood? Have not women even a greater regard for appearances than men? and will there not consequently arise in them even a stronger check to whatever is rough or boisterous? How absurd is the supposition that the womanly instincts would not assert themselves but for the rigorous discipline of schoolmistresses!"

This is well said and absolutely true. Think of it every one of you mothers, and try to realize the injustice you are doing your girls when you shut them up in the house and apply a constant repressing process simply because they did not happen to be born boys. It is quite as necessary that they be strong and robust as that their brothers should be, and the same processes will make them so. They need just as much fresh air to make their blood pure, just as much exercise to make their food digest, just as much of everything to enable them not only to grow into maturity, but a strong and vigorous maturity, as do the boys.

Perhaps one reason for denying girls out-of-door sports has been a general idea that a delicate, fragile maiden, a pale, lily-like creature, was more attractive than a rosy-cheeked, well-developed, vigorous girl with a good appetite and good digestion, but that day is past and the time is coming when people will be ashamed to be sick.

Give your girls an equal chance for health with your boys. Remember that the burdens which life will bring to them will call for just as much vital power, that they will need just as much strength to bear them without sinking, and that the consequences of weakness are far more extended in influence, because they are impressed upon the children they may bring into the world.

Let them run and play, climb trees and scale fences, anything within the bounds of reason that will develop their muscles, give them pure blood, and lay the foundation of a healthy, happy and beautiful womanhood.

CHAPTER XVII.

COLDS AND COUGHS.

If there is a mystery upon the face of the earth, one that absolutely defies a solution, it is the way in which colds come to men, women and children indiscriminately. Now and then their origin is traced to some direct exposure, or it is thought possible that it might have been induced by some change in the wearing apparel, to a sudden chill induced by a fall of temperature, but usually the cry is, "I can't imagine how I caught it, and I think it just came." Perhaps you will be surprised if I tell you that in nine cases out of ten the latter is the wisest reply, for without doubt it did "just come." It was not "caught" at all, but simply resulted from certain physical conditions which had, perhaps, been pointing to this culmination for some time, if it could only have been understood. A sudden change in the weather may have determined these conditions into this form of bodily disturbance, but it did not originate it.

Already I perceive the unbelieving shake of the head. Well, if doubt has entered your heart, I might as well go on and intensify it, or endeavor to dislodge it entirely. I do not expect you can at

once be brought to see with my eyes, but all I ask is that you simply give my advice a trial after reading my reason for offering it, and then if you do not find it wisdom, it will be easy enough to go back to old methods.

Now, in the first place, I believe a cold, generally speaking, is simply an expression of a disordered stomach. "There she is," you exclaim, "going back to her hobby." Well, I want to ask you a few questions:

1. Have you not sometimes had a cold in the hottest of weather, when it would have been an impossibility to be cold even if you had divested yourself of every particle of your clothing and remained for some time in the state that Nature made you?

2. Haven't you sometimes gone through with all kinds of exposure in bad weather safely, and then, again, some fine, clear, delightful day, suddenly succumbed to a cold, with seemingly no shadow of a reason?

3. Have you not noticed that during a period of intense cold in the winter that the majority of people will be free from the colds, which a sudden change to a "warm spell" will seem to make general?

I might go on with others, but these are sufficient for my purpose. In the first place, you will acknowledge that the "cold" in hot weather was not the result of getting the severe chill which is thought necessary to produce such an effect. In

other words, it was not caused directly by any change in the temperature. Well, then, what was it?

Undoubtedly, if you could trace back your physical condition for some days or weeks, you would find that you had not been digesting your food properly. You had felt languid and heavy, perhaps had a headache, but, at any rate, your stomach and bowels had been inactive; your system therefore became a depository of *filth*, which should have been carried off, and the resulting diseased condition made itself known in what is usually termed a "cold." Dr. Page says: "Whatever interferes with digestion or depuration, or depraves the vital organism in any manner, produces an impure condition of the body—a condition of disease, and a continuance of disease—producing habits which must inevitably result in periodical or occasional 'eruptions,' the severity of which will depend upon the degree of one's transgressions." In other words, it must express itself in some way, and its most common form is this one of which we are speaking.

The reason why you endured exposure at one time with impunity was because your digestion was good, your blood was pure, and your system was in a state of health. It took "cold" without exposure simply because your body was poisoned, although perhaps you did not realize it. The same thing is true in the warm spell, when "colds" are so prevalent. During the intense cold weather the system is toned up by the bracing air, the appetite is

good and digestion vigorous. The temperature changes; the tonic of the clear, invigorating atmosphere is gone, but the appetite does not fail at once, so hearty eating is continued, and the stomach is not equal to the demands made upon it. Digestion grows sluggish. Result, a cold.

The real truth is, that people who are in ordinary health and in comfortable circumstances have no business with "colds," and the day will come some time in the future—it may be distant—when to have one will be considered almost as disgraceful as to have the itch, for it will be recognized as a filth disease. That is putting it very strongly, you will say, but the subject needs plain speaking. I will say further that these long continued coughs that rend and tear and rack the body, finally wearing it out, are absolutely unnecessary, and with proper care could be avoided?

How, do you ask? By taking it in the beginning by the throat and strangling it absolutely. That is, when you first feel a cold coming on—there are always unmistakable symptoms—stop it. Do not let it get seated, as they say, or, more truthfully, get the poison out of your blood, the accumulated filth in your body which has started a fever, out of the system, and you will be all right. And the way to accomplish it is not by dosing patent medicines, but by letting Nature do the work, and she will, if you give her half a chance.

The conditions which bring about this "erup-

tion" are an overloaded stomach and bowels, or impure air, one or both, usually something of both. The remedy, then, is easy to see. Abstain from eating until Nature can dispose of the load that is poisoning the blood, and stay out of doors, or, at least, give yourself plenty of fresh, pure air, to aid in cleansing it of the poison already there. At the very first symptoms—it is easy enough to recognize them—stop your meals for a longer or shorter time, according to the severity of the attack; exercise in the open air; sponge off the skin, rubbing it briskly, and rest assured the trouble will soon disappear. Of course, you do not want to go right to work and overload your stomach again, but be temperate after your abstinence until the system has a chance to regain its wonted tone. You may not have to go without more than two meals; you *may* be obliged to fast twenty-four or forty-eight hours.

Of course, the majority of you will not like this sort of medicine. You had rather dose any amount of nauseous stuff than deny your appetites; but try it once—you can surely do that—and see if I am not right. Then, if you choose to go on eating, breathing impure air and coughing, you can do so, only you will deserve very little sympathy. Of course, deep seated cases, cases that have developed into consumption, rheumatism, etc., require more heroic treatment. In the Boston Journal of Chemistry, of February, 1882, a case is reported of an old man of seventy cured of consumption, which had been com-

ng on three years, by a forty-three days fast. He had been a great sufferer, but even at that age he got well.

Dr. Wood, of Bishop's College, Montreal, reports forty-seven cases of acute articular rheumatism cured by fasting, the time required differing, but none longer than eight days, or less than four. Of course, such abstention from food seems a very hard thing, but when one is writhing in the grasp of the rheumatic fiend, it amounts to but little.

Dr. Page tells in the *Popular Science Monthly* for January, 1884, of his own experiments with himself. He had been a life-long sufferer from "colds" in their various forms, with occasional attacks of neuralgia, rheumatism, throat and lung affections. He changed his whole course of life, gave up the mixed diet of meats, pies, etc., and three meals a day, took but two meals, and those made up principally of breads and fruits, skipped a meal whenever there were any symptoms of indigestion, such as a sour stomach, flatulence, etc., and the result is perfect health and immunity from the old troubles, even under what might be considered the most dangerous exposure. In fact, he finds it now, so long as he keeps to that course, next to impossible to take cold.

People who shut themselves indoors, taking little or no exercise, are those who find it necessary to fairly swathe themselves in flannels, and yet they are always taking "cold," while the one who opens the windows and doors to let in the fresh air when in the house,

who goes out at all times and in all sorts of weather, is rarely troubled with that difficulty. Now, I do not want to be understood as advising people who for years have kept themselves housed and exercised all these extra precautions against "colds," to rush out at all seasons, lightly clad, making a sudden change in all of their habits. Care must be taken not to overdo the matter in this, as in everything else. Begin gradually to accustom the system to more exposure. Be very sure there will be no rebellion from an overdose of fresh air, but you might develop trouble from getting a chill while the system is not yet strong enough to react. For in reaction lies the whole secret of not taking cold when subjected to an atmosphere of a low temperature. If the blood is pure enough to warm the chilled body, there is simply a little temporary discomfort, and that is all. And that is why I urge you to be careful to have your digestive organs act well, and to have enough pure air to breathe in order not to take cold.

CHAPTER XVIII.

HOW TO MANAGE A COLD.

The physical phenomena of a cold is simply the expression of a fever in the system, and this fever has to be subdued by some means. You all remember the old maxim, "Stuff a cold and starve a fever," which is really a distortion of what should read, "If you stuff a cold, you will have to starve a fever." There is nothing truer than this, except that people never "starve the fever" even, until it has grown so powerful as absolutely to put a stop to any healthy action, and is ready to burn the patient's physical system to its death. If, instead of this, he had starved his cold, given himself plenty of fresh air, perfect ventilation when sleeping, sunshine and air and water baths, with thorough sponging, the fever would have been soon vanquished.

"I never over eat," says some one. "It would be impossible, for I only take the smallest quantity of food at any time, and yet I am always having colds."

My friend, I presume you are the very one who needs this caution the most. You eat little because it is not natural for you to eat much. It would be a physical impossibility for you to take ~~half~~ what

your friend eats and digests well, without being utterly miserable. It is easy to convince yourself, however, of the truth of what I say, by trying the experiment as I have advised.

One thing remember. No matter how slight a cold may be, it should not be neglected, or left to "wear itself out," as many people express it. If allowed to go on it may leave irritated and enfeebled conditions of the mucous membrane that lines the nose and bronchial tubes, producing thickening, in which case a cold is far more readily taken than before. Chronic bronchitis and catarrh are the result, neither of which are absolutely dangerous, but both intensely disagreeable, and sometimes painful in present experience and in results.

Now as to remedies other than what I have told you of in the way of abstinence in regard to diet, etc. First, I must emphatically object to the great army of patent medicines which are put up for coughs and colds, from the fact that they usually contain narcotics which may quiet at the time, but deaden the vital powers, and thus hinder instead of helping the system to throw off the accumulation of refuse matter. Instead of these take those things which will promote the action of the kidneys, bowels and lungs.

For the first nothing is better than to drink a great deal of water, hot or cold, just which seems most agreeable and best for the individual. Only do not drink it rapidly, now or at any time. Sip it slowly, so that the stomach may get accustomed to

the temperature, but manage to get a good deal down.

To move the bowels one of the best things is citrate of magnesia. Get a bottle and take a good-sized wine-glass full, hot, every four hours until action is secured. The little stomach pills, which I mentioned further back, are excellent. Keep the skin moist; that is the pores open and acting freely. *If the eliminating organs are active*, the cold will be readily removed. Hot drinks—lemonade in particular—are excellent. When the cold seems to be in the head, use water as hot as can be borne upon the forehead, eyes and nose, frequently, until relieved. This will put it to flight in short order, providing the general habits have been attended to as before directed. Another good thing is to put a teaspoonful of camphor into a pint of boiling water; pour the mixture into some deep vessel and then wrap a newspaper about it in such a way that the steam may be confined so as to pass directly into the face and be inhaled. This has a wonderfully cleansing effect upon the air passages. It is a good thing to put the feet in hot water, as hot as it can be borne, but do not let them remain there longer than four minutes at a time. These long “soaks” are weakening and hinder more than they help the system to throw off the bad conditions. If the skin is dry and feverish, a hot bath or a vapor bath are excellent, but either must not be prolonged till the patient grows weak, but only until a perspiration is produced. If there

is to be any exposure afterwards the surface of the body must be sponged off with cool water and rubbed thoroughly. The best way is after a good rubbing to get into a warm bed and lie there until morning.

If a cough seems to be disinclined to leave one, a most excellent remedy—after other general directions are followed with regard to the diet, bathing, fresh air, exercise, etc., is the following :—

Put 1 oz. of liquorice root, and 1 oz. of gum arabic into a teacup of boiling water, and let it stand until the gum is dissolved and the goodness extracted from the root. Add 10 grs. of pulverized rhubarb, 2 ozs. of Jamaica rum and sugar to suit the taste. Put in enough more water to make a teacupful when it is strained. Take a teaspoonful every four hours. This is excellent for any kind of a cough.

Here is another highly recommended for coughs and soreness, rheumatism and neuralgia :—

One oz. of the buds of Balm of Gilead in 1 qt. of alcohol. Let it stand twenty-four hours, and then take a teaspoonful three times a day in hot water with a little sugar, a half hour before meals. Some persons can only take a half teaspoonful.

Another good one is this : $\frac{1}{2}$ oz. rhubarb root ; $\frac{1}{2}$ oz. ginger root ; $\frac{1}{2}$ oz. columbo ; in a quart of Jamaica rum, the whole sweetened with honey. Take it three times a day, the same as the other, or when a very bad paroxysm comes on.

It is hardly necessary for me to caution you about sitting or sleeping in damp rooms, either when you

have a cold or are perfectly well. I shall speak of this under ventilation, and yet so many get chilled in this way, that a word here is not out of place. Be careful, too, not to make sudden changes in clothing in midwinter; because a mild day comes do not leave off your flannels, or go away from home without warm outside wraps. Ere six hours have passed old Boreas may send a blast that will chill you to the heart. Do not sit out of doors upon porches and piazzas summer evenings with uncovered heads and without shawls. In very few climates is this ever safe, and in most it is positively dangerous.

I cannot close this chapter without a few words in regard to "cultivated coughs." No doubt you will be surprised at the very idea of such a thing, but I assure you there are many people who are tearing their throats to pieces and exhausting their vitality when there is not the slightest necessity. A little tickling or irritation in the throat leads to an inclination to make an effort to relieve it, and if indulged in, by and by, it becomes involuntary and ready to repeat itself constantly. If you will only think that no structures have been provided expressly for coughing, and that those for talking and swallowing are thus put to an abnormal use which weakens and irritates them, you will readily understand how the cough is kept up. Besides that, the spasmodic movement "flops"—I can think of no more expressive word, homely as it is—up the stomach each time and gets that out of order, as it naturally would do, al-

though people rarely think of that evil when they are coughing.

In the beginning you have the veto power almost absolutely in your hands. Use it with the utmost determination. Repress the inclination, and by and by it will pass away. I knew a young man who was thought to be dying of consumption. Such a cough! For a long time his friends and he himself regarded it as the sure harbinger of his death, until an accident proved it to be a cultivated one, and it was cured by his own determination. This was how it happened: He chanced to be put into a room one night next to a very sick woman, whose life hung by a thread. Sleep was what she needed to strengthen it. He found that he could hear every movement in her room, and therefore sounds in his must be equally distinct. He resolved to cough as little as possible, and struggled to repress each threatening. After a time the disposition to cough grew less, and to his surprise the next morning he found that he had slept better than before for months. Thinking it over he said to himself, "If I could keep it back one time I can another," and forthwith the battle began. It took some time to cure what had been of such long standing and build up the wasted tissues, but to-day he is a well man.

The best way to overcome the desire to cough is to distract the mind from it as much as possible. Try to think of other things. Whatever will entertain or deeply interest will help in the work, and rest as-

sured there is such a thing as overcoming the disposition in many cases. Try it you who have one of these hacking coughs, and see if it does not get better. Especially let those who have colds which show themselves in that way, determine that it shall not take hold of them for any permanency. Fight it as you would a wild animal attacking you, and in a short time you will find that you have the advantage. Try it and see.

CHAPTER XIX.

OVER-FAT PEOPLE.

Not long since some one wrote a letter asking the author of this book, in most distressful words, what the writer should do to prevent further accumulation of fat. She was already burthened to such a degree that it was impossible to take exercise comfortably ; she felt puffed up and choked at the slightest exertion, and, besides, she *looked* anything but attractive, though before she grew so stout she had been called pretty. About the same time this letter came I read the following in a Toronto (Ont.) paper, the question of embonpoint being under discussion :

“DEAR MADAM—I was greatly troubled with too much flesh some years ago, when I was barely out of my teens. A French lady of my acquaintance gave me the following advice: Wear stays tightly laced day and night, eat sparingly, avoiding all fats and sugars, take the very minimum of sleep consistent with health, and drink the juice of three lemons a day, with a very little water, and drink nothing else. I followed these directions, and succeeded by degrees in reducing my weight from 165 pounds to 115 pounds, which is about right.

VIOLA.”

It hardly seems possible that in this day and generation any person with common sense would soberly give such advice, or that any one could be found so insane as to follow it out. Years ago, before the injury done by tight lacing was so well understood, it would not have been so strange. We hear of women who tied their corset lacers to a bedpost, and drew them a little tighter each day, until their waists were of the desired spindle size; but in these later days of intelligence in regard to health matters, anything approaching such folly would not be expected. Yet the letter given would seem to show that there are yet some idiots left in the world. To wear stays "tightly laced night and day," never to allow the lungs to be filled with fresh air, to thus deny the stomach any chance to digest what food is taken, to give no means for purification of the blood, to invite disease which will not only shorten life, but make it a burden while it lasts—these are the consequences of following such suicidal advice as is contained in the above letter, though the directions in regard to diet and drinking are not objectionable.

As I shall tell you by and by, corsets may be worn without injury, providing they are flexible and not laced so as to impede respiration in the *slightest degree*, but better a thousand times discard them entirely than to allow any inclination to stoutness to lead you to wear them too tight. You can produce the same evils by whaleboning your dresses and having them made so close as

to require great effort to fasten them. I remember seeing a lady once while dressing for a party obliged to call in her husband to help button her dress together. Their united efforts were scarcely sufficient to finish the task. It is true her waist *did* look exceedingly small, too wasp-like, in fact, for the rest of her figure, but her face was a very unbecoming red, and she was so utterly uncomfortable as to be unable to enjoy herself, or to help those around her to be happy. Remember this: *Nothing is ever gained in the way of beauty by undue compression of any part of the body, and health is always injured.*

People do, sometimes, grow over stout, so much so as to be dangerous to health and life, besides destroying good looks. Not only are the muscles clogged by an accumulation of fat, but the spaces around the vital organs of the body become filled in and thus prevent their perfect action. This in time will cause them to grow flabby and impoverished, the breathing will be difficult if any hurried movement is attempted, the head will swim, and there will be various other unpleasant symptoms that show the body is not in a good condition.

It is no wonder that people thus afflicted will be led, both by vanity and a desire to be comfortable, to seek some remedy for this disease, if so it can be named. There are numerous anti-fat mixtures put upon the market, but against these, one and all, I must enter an emphatic protest, unless they are taken under the advice of a good physician.

Doubtless they may sometimes reduce the fat without harm to the health as they claim, but to those whose systems are in a different condition, they may prove an absolute poison. Death has more than once been produced in this way.

Corpulence may not be regarded as a disease absolutely, but it is certainly very uncomfortable, and without attention it will surely shorten life. It may be the result of over-feeding and inattention to the condition of the bowels, but in almost every case there is too much carbon taken into the system and too little thrown out. What should have been excreted is therefore deposited in the form of fat, and this checks the nutrition and repair of bone, brain and muscle, with a consequent loss of strength and vital endurance.

Most of you can think of some one who is stout, perhaps rosy-faced, who looks to a casual observer the picture of health, but who cannot begin to endure what her thin, delicate-looking neighbor can. Complaining of lack of strength, she is regarded as a "lazy creature." "She certainly looks well enough," say people, "and it is only because she does not want to exert herself." In nine cases out of ten this judgment is unjust. Before the fat began to accumulate she was as active as the majority of people, and could endure as much, but this piling up of a tissue for which there is no earthly need has reduced her to this condition. Let me tell you what it has done, and how.

Adipose tissue ought to form about one sixteenth part of the weight of the body. Then a person looks well, is just plump enough to give the roundness that preserves the lines of beauty, and yet has no burden to carry about, hindering all the processes of life. More than that checks respiration, circulation, digestion and elimination, and if these are imperfect you can all readily see that the body must become enfeebled just in proportion as the fat accumulates, and the longer this state of things continues the harder it will be to return to a normal condition. And this is easy to understand, for the bowels grow sluggish and inactive, and the fat piling up in and around them dilates and pushes them out of place. If they are dragged down other abdominal organs are also, as might naturally be expected. You never see a person who is over-fat who has not a protruding abdomen.

When the organs of waste and repair are thus prevented from carrying on the vital processes healthfully, there must be a loss to the bony framework of the body. The bones lose strength and elasticity. The skin becomes thin and sensitive. The brain, too, partakes of the inactivity and loss of power of the body. You often hear fat people complain that they cannot think well, and that their memory is poor. Naturally these things must be, for sluggishness in the operations of the physical part of the system cannot fail to produce the same thing in the mental.

Now, I think you can plainly see why obese persons are not only uncomfortable, but are not strong, and often real invalids. This is not all, for their condition is often absolutely dangerous. They can not exercise, because they have not the strength to carry around their burden ; they can not digest well, because stomach and bowels are sluggish and inactive, and the latter are crowded out of place ; they can not breathe freely, because the system does not throw enough carbon out of the body to enable sufficient oxygen to be taken in.

What is the remedy for this state of the body ? As I said before, medicines taken into the stomach to reduce fat must be injurious from the very nature of things. If they kill fat cells they must destroy other tissues, for in order to reach these fat deposits they must be thrown into twenty pounds of blood from the stomach and traverse every vital structure of the body. Not only in the stomach, but along all the routes of circulation, are important cells, forming tissues, belonging to the vital organs, which will be enfeebled and wasted beyond what is safe or easily remedied. Therefore, I advise you, no matter how burdened you may be, nor what brilliant prospects are held out to you, not to take any of these fat-destroying compounds into your stomach. There is a way, however, unless neglected too long, by which this accumulation can be controlled without any harm to the general system, and the result be highly satisfactory. It takes time and patience,

with the knowledge that the tissue cells, whether of fat, brain or muscles, have their legitimate term of life, and will die if not fed. This being so, the next thing is to know what produces the first, and then stop feeding it. Well managed, a radical change can be made in the nutrition of the body, and the fat-making, which is done at the expense of the other tissues of the body, be entirely cut off. One thing is certain: Brain, bone and muscle always *wait* vainly for nutrition when adipose tissue is made too rapidly, and when the latter process ceases you may be pretty sure the others are building up.

"Now that you have told us how miserable we are and what has caused it," exclaims our obese friends, "tell us what we must do to get rid of our burden, what we must eat, what drink, and how to live."

That is just what I am going to do.

CHAPTER XX.

THINNING AND FATTENING PROCESSES.

A mixed diet is supposed to be the best, if the very highest physical conditions are to be reached, and so it probably is. If, in the beginning of the fat accumulation, when people are feeling stuffed up and heavy, when the weight is increasing and digestion growing sluggish, they would think about this matter, a safe conclusion as to the cause could soon be reached. Should they find that they are eating a fairly equal proportion of meats, vegetables, bread, sugars, oils, etc., it is almost certain that they are living too high, eating too much, and there is but one bit of advice to give them—eat less. Cut down the amount of food and take more exercise. More than likely, however, it will be discovered that the bulk of the food is made up of articles that contain a large amount of starch, such as potatoes, beans, peas, in fact, many of the vegetables, and all kinds of bread made from the different grains. Often they will say that they have no desire for meat, unconscious that this very thing shows that these nitrogenous elements are thrown out without serving the body; in other words, the meats are not digested

and assimilated in the tissues as they ought to be, and the latter are starving, causing the body to grow weaker.

The first thing to do, then, is to change the diet in that respect. Cut off the starches. Eat very little bread, or anything made of flour. Let vegetables containing starch alone. Do this until the system forms the habit of noticing and digesting food containing nitrogen instead of the carbon of starches.

Next eat no rich food. Fat meats, gravies and oils are to be omitted. Sugar must not be indulged in; milk and cream sparingly taken, and absolutely no wine or beer. Tea and coffee must be banished at meal times. The drink between meals should be, if possible, lemonade, or cider if liked, but something a little acid. Lemonade is better than anything else, but an excessive amount of that should not be taken. And be careful never to eat heavy meals. It is better in such cases to eat too little than too much.

"I should starve," some one says. "You leave us next to nothing to eat, and very little of that."

No; you will not starve in the future unless you choose. That is what you have been doing in the past with most of your tissues, and I want to cure you. You have swallowed more than enough food, but it has all done nothing for you only to pile up a mass of fat, which is of no use and a heavy burden to carry. Every other tissue in your body is crying out for nourishment, and you do not give it. They want meat—any kind but pork—fish, eggs, fruit,

and only as much of those as the enfeebled digestive organs can properly dispose of. Take these in the proper way, and follow out the rest of the directions I am about to give you, and you will find yourself healthier, stronger, thinner and happier, than you have been since the first accumulation of the adipose matter began.

About three times a week take a hot bath, but do not remain in the water longer than four minutes, as anything beyond that is debilitating. Vapor baths are good, given under the directions of a physician—anything that will arouse a copious perspiration. Of course, care must be taken not to get a chill after them. To rub the body with salt and alcohol will do much to prevent this, or with olive oil. Dry heat applied to the abdomen by means of a hot plate, or cloths heated as hot as can be borne, helps to disintegrate fat. A great deal of friction over the whole body establishes a fine circulation, and helps carry off the fat particles as well as all other objectionable products.

As I said before, drinks must not be used with the solid food, but a half-hour before meals a half-tumbler of water, hot or cold, as it is best liked, with a piece of bicarbonate of soda as large as a pea dissolved in it, should be swallowed.

A great deal of exercise, both out-doors and in, must be taken, just as much as can be without exhaustion. I shall soon tell you how important a large supply of fresh air is for health, and it is

absolutely necessary in this reduction of excessive carbon. The food cannot possibly serve its purpose unless enough oxygen can be carried into the lungs to eliminate the carbon from the blood. Walk every day and several times a day. Walk and work. This will help much to dispose of fat and give to the enfeebled muscles nutrition and strength. You can readily see the philosophy of exercise in this connection. If you by a change of diet, bathing, etc., stop producing new fat cells, the old ones will die, and they will be thrown off rapidly by the quickened circulation of the blood produced by motion in the open air.

When the fat begins to grow softer—as it surely will if these directions are faithfully carried out—and you feel lighter, then one vegetable may be added to the diet, but no desserts must be taken, unless it may be an orange or cooked fruit, until new conditions are thoroughly established.

Does all this seem too difficult to carry out, involving too much self-denial and effort? Well, then, you must go puffing on your unwieldy way, and by and by, when your vital powers are all burned out, some sudden chill or little exposure will end the whole of life for you, while proper care would have enabled you to reach a ripe old age. It seems unnatural that persons so burdened with fat can hesitate to use every means possible and safe to get rid of it, or that they can fail in perseverance and determination when the result is so certain and so desirable.

Do not be discouraged if you cannot at once perceive the longed-for change. It is best that it should be accomplished gradually. Anything that would reduce stoutness immediately must give a dangerous shock to the system. The trouble did not all come at once, but by degrees, and it must be gotten rid of in the same manner. The body should be given time to accommodate itself to the new order of things.

While the over-fat people are groaning over their burdens in bitterness of spirit, there are others, made up apparently of only bone and muscle, who would give much could they only coax a layer of flesh to softly round the angles of face and form, and give them the beauty that curves instead of corners always produce. They gaze with envy upon their moderately fat neighbor, who looks so hearty, healthy and happy. They may be twice as strong, have far more endurance, but they are conscious that a filling in of the hollows, and a rounding out of the muscles, would make them far more beautiful, a desire that is near the heart of every woman.

Taking the right course, it is not a hard thing to do, though some of you, perhaps, who have been trying fattening medicines may differ with me. If you are healthy there is no difficulty. Do not take any anti-lean nostrums. They will create a false appetite, which will only cause a derangement of the stomach and digestive organs. The principal thing for you, after observing all the laws of health which

I have given, or shall give, is to regulate your diet. This must be entirely different from that prescribed for our fat friends. Of course, you must only take what you can dispose of well, but you need generous living. Eat a good deal of sugar. Drink milk and cream all that your stomach will take and digest. Fat meat, and gravies that are not too rich, are good for you. Vegetables that contain starch, in fact, starches of all kinds that agree with you, will promote your purpose. Avoid a great deal of acid food. A *very* good thing is to get fine glycerine and take a teaspoonful four or five times a day. If you like olive oil with your food, it will help.

Sleep all you can. That is very important. Do not exhaust yourself in any way. Maintain an easy, equable frame of mind. Excitement and keen emotions take off the flesh cells. Laugh all that you can. You do not need vapor baths, although you must keep your skin active by rubbing, because that is a condition of health. If you are reasonably healthy and follow out these directions, you will soon have the satisfaction of seeing the lines of beauty in face and form, and to hear the exclamation, always pleasant, "How well you are looking!"

CHAPTER XXI.

OLD PEOPLE AND THEIR HABITS.

People always dread to grow old. In their thoughts it is associated with infirmities and a general decay of body and mind, with an ending of all that is pleasant and desirable in life, with pain and weariness without compensations, with a departure of everything that is beautiful, and no hope of a return. The old are going down into the valley of death, and its shadows reach backward to them, with no chance of any change except to grow deeper. There is a dread of losing all comeliness, of parting with both physical and mental strength, and even a living faith in a glorious Beyond does not make the waning years watched any less regretfully.

This is all wrong. Every change that Nature brings, if completed without violence and worked out in her own way, is beneficent. There should be nothing more repulsive nor more to be dreaded—except that it is the prelude to an unknown and untried future—than the passing from infancy to youth, from that to womanhood, until the full strength and glory of maturity is reached. In its way a ripe old age, the crowning of a long life well lived, is as beautiful as a sunny, happy childhood, for the latter

contains nothing beyond a promise, while the former is rich with full fruited meanings.

Of course, the question comes at once, of how this healthy, hearty, pleasant old age is to be reached and prolonged. It is not likely to come without the years preceding it have been fairly well lived. If the system has been all broken down by excesses in youth and middle age, health later on cannot reasonably be expected. From fifty the vital forces are decreasing rather than increasing in the very healthiest, and it is then, no matter how strong and vigorous a person may be, that he must begin to be less prodigal of Nature's gifts and to lay up a reserve fund for the years to come. This is difficult to do, if everything has been used up in going along and more too, if constant overdrafts have been made upon the body all through the previous years.

Suppose, however, you have reached sixty years old, and are fairly well. You have still many years before you, years in which much pleasure may be yours, years in which you may not only be happy yourself, but be a never-failing source of comfort to all around you. I have before me as I write the lovely, placid face of one who has lived fourscore years, and yet retains every faculty of mind and body to a degree that precludes her being anything but a blessing and a benediction to all who come into her sweet presence. You may do the same if you live rightly.

You must remember, to start with, that since all

the vital powers are waning, they must be taxed less. The digestion is not so vigorous. You must therefore eat less in quantity, and be more careful about the quality. The appetite may still be vigorous, for habit has much to do in this direction, but you must gradually accustom yourself not to give it entire satisfaction. A disordered digestion, which a few years ago might produce but a temporary disturbance, grows more and more dangerous as the years pass on. The victims of apoplexy might be spared if they could only realize that their systems cannot, in these later years, endure what they once could without difficulty. The terrible paralytic strokes that render old people as helpless as children, if they do not terminate life itself, might be avoided with proper care and self-restraint. These must be practiced. Cut off the quantity of food. Eat what is most nutritious, and what you like best, unless you know that it actually disagrees with you. Take very light suppers, or none at all if you retire early.

There is another reason for diminishing food. You do not get the exercise that you did in your more vigorous years; consequently there is less waste to repair in the body. You do not use your brain so constantly, so that it needs less to build it up. And yet you must take what exercise in the open air you can, in order to keep your blood pure and promote all the functions of the system.

I have told you before that no day should ever pass without an evacuation of the bowels, but it is

doubly important to the old. You cannot afford to have the poison from this decomposing, filthy matter passing into your blood a single hour. When there is the slightest constipation, take the mixture of figs, raisins and senna mentioned elsewhere. That is always good, and can hurt no one. Citrate of magnesia is also excellent, particularly when there seems to be flatulence, or gas upon the stomach.

Be careful never to get overheated. Your blood cannot cool off without injury, as it could in years ago. Do not overwork or over-fatigue yourself in any way. Remember that the resulting waste may be so great that you can never recover from it entirely, and it may leave you in a state that will cause fatal disease to seize upon your system.

Sleep a good deal. Take an after-dinner nap. The practice of dozing after eating is coming to be recognized as a law of Nature, which we have constantly violated. Animals always lie down to slumber after taking a full meal. Imitate their example, and you will be the better for it, especially in these failing years. A great many old people do not sleep well nights. That is all the more reason why they should go to sleep days whenever there is the least inclination that way.

Maintain your interest in what is going on around you. Do not feel as if you had no longer anything to do in the world simply because you cannot do as much. It is true that you have had your day of activity, and that you must expect to see younger and stronger persons taking your place in many

things, but do not allow yourself to be pushed entirely to the wall, by giving up all part in the busy life of the younger generation. Those who live the longest are they who keep youngest, that is, who exist in the present and not entirely in the past. Preserve your sympathies for the young people around you fresh, enjoy their pleasure in what has long since ceased to please you, and they will love and cherish you instead of feeling your presence a burden.

Avoid care, worry, and all sudden and violent emotions. Remember that the walls of the blood vessels have grown weak, and anything which causes a rush of blood to any part, either by mental or physical exertion, a violent strain of any kind may cause it to give away and death result. And this is another reason why you must avoid constipation. Let me warn you here most earnestly never to strain when you are at stool, for it is quite possible for it to be fatal.

A calm, quiet life is better for every one, no matter what their age, but it is an absolute necessity for the old, a life that will not set the blood to flowing violently to any of the weakened organs of the body. Their elasticity is gone and with it their endurance.

Sometimes when the life works are well nigh run down, they need something to start them on again, some kind of a stimulus to set them going. A little wine is good. Jamaica rum diluted in hot water, two or three teaspoonfuls, and then sweetened, taken two or three times a day is excellent. No matter

what your temperance principles have been in the past, it is not wrong for you to take such things now. All danger from their use is over, and they may help to prolong your life and make you more comfortable.

Following these directions, few and simple as they are, and you may live a serene, contented life well on to the nineties, and perhaps even to the rounding up of a century. Be content in these later years to stand quiet while the rushing stream of life goes by, catching its gleam and sparkle, but making no effort to beat against its strong waves. Above all do not complain because you *are* old. Do not let yourself feel what I have tried to picture in the following lines, because there may be those among the young and strong who are cruel in their very strength:—

You said, I heard it, in voice so fresh and young,
In speech so full of scorn, whose accents rung and stung—
That I had grown so old, of use I'd ceased to be,
Naught could I give the world, naught could it do for me.
When that time came to you, you *hoped*—sarcastic word—
You'd have the grace to die—to live would be absurd.
For who could bear to see an old, worn, withered face,
Or list the feeble tones, or wait the halting pace.

I heard each stinging word. You stood with beauty crowned,
High health and hope, glad gifts, with which youth's years
abound,
Just as I stood one day, it seems not long ago,
The rose on cheek and lip, my pulses all aglow,
With brow as white as yours, with eyes as soft and bright,
That saw the coming years as full of strange delight;
I gloried in *my* strength just as you do to-day,
And scorned whatever seemed to whisper of decay.

A happy bride I was, just as you hope to be,
The roses in my path as glorious to me;
And then my baby came; oh wondrous motherhood
That brought such solemn joy! It seemed that angels stood
And whispered of the life part human, part divine,
Which baptism of pain had made so wholly mine.
And still youth lingered on; and still no thoughts or fears
Of change or growing old thrilled through the passing years.

Ah, days so full of grace, of glory that has fled,
It is so hard to know they're numbered with the dead.
In the music of my life Death's discord came at last,
And when in one brief hour its agony swept past
It left me desolate. Oh, God! to stand alone
With heart and brain struck numb, and breathe no sigh nor
moan!

The Summers came and went, with bloom and fruit and song;
I walked with bleeding wound life's thorny path along.

All things must have an end. And so as years went by
This grew to be endured. I knew I could not die
And leave my little one. Hard toil was then my lot
For weary months and years. And peace—I knew it not.
So now I'm worn and old. 'Tis true just what you said,
My face is seamed with lines, my beauty all has fled;
I walk with feeble step, my sight grows very dim.
Almost I hear the voice that calls me unto Him.

You're sorry for your words? You recked not all they meant?
Ah, well, the pang has passed! 'Twas but a thought that sent
The arrow through my heart. A thought of what a dearth
Of love and hope was mine, forever mine on earth.
I'll find them over yon. Upon the shining strand
My darlings wait for me, safe in that better land.
They wait with love and faith; their voices clear I hear,
Sweet peace once more I feel, for Death I know is near.

"Sweet peace," that is it. What should bring that more than the consciousness of a well rounded life approaching the end calmly, happily, with the light of the golden Beyond shining back over the hill tops into the eyes growing weary with looking at the toils, the cares, the sorrows of the eager ones around you? A beautiful placid, serenely contented old age! May we, one and all, make it ours:

CHAPTER XXII.

THE LITTLE ONES.

Few people stop to think that the physical care of little children devolves for the greater part upon inexperienced fathers and mothers. Their moral and intellectual culture is never intrusted to those who are without knowledge of what is felt may make or mar their whole future. Thoughtful parents make any sacrifice to guard their offspring from the approach of incompetency in their education, feeling that the impress of ignorance and wrong made upon their tender young minds can never be wholly obliterated through all the years of a long life. And yet to secure their physical well being there is not the slightest preparation.

Let a young girl, even with the prospect of marriage close before her, say to her mother or nearest friend that she wishes to know some general rules by which she shall be governed should children come to her, or let her make any inquiry of those who have raised families, in regard to the care of infants or young children, and she would be met with such looks of amaze as to frighten her into the belief that she had done something that should have been left undone until a need for such information might arise ;

whereas she would have been showing the soundest sense.

The world is full of books and papers discussing the rights of women, of blacks, of workingmen of various classes, but the rights of babies have been let religiously alone. They are born into homes where there is very little knowledge of their wants and necessities. Thousands die every year because so many of the laws of life are antagonized so that growth cannot take place, and were it not for the mother's love and strong instincts many more would be sacrificed upon the altar of ignorance.

Marriage implies motherhood. It is a pity that it does not also imply a knowledge of some of the simplest laws that should govern that motherhood.

Before the baby comes into the home circle the subject is ignored. Afterwards, the desire to manage it well, to secure its highest well being, is stronger than to manage a nation. The young mother is willing to lay down her life for her baby, but often she feels utterly ignorant and helpless, and so in a measure she is.

Many children are born into the world with inherited tendencies to disease, and all the skill and care that can be lavished upon them may not be sufficient to right the wrongs that existed before birth, and must be carried until the spirit is clothed with a new body.

Others come with tendencies less marked; that with care and watchfulness may be outgrown. In-

herited diseases of the body must be treated like inherited sins. If a boy is a liar and thief as his father and mother were before him, you would not unwisely say—nobody would—“poor fellow, those vices cannot be overcome,” but go to work faithfully and continuously until the evil disappeared. So it should be with the body. By the same law that gives an evil inheritance, does good come, and life is a continued struggle to overcome all that is wrong and defective, and establish all that is lovely and attractive.

While a poor inheritance is sure to cause the development of diseases of different kinds which must be fought constantly, even strong, healthy, well organized children have their little ailments, but if mothers and all persons who have the care of these little ones have some general rules to go by, they will often be able to mitigate evils, and gain courage to wait for simple measures to take effect.

The teething period is one that is always sadly regarded. A haunting fear possesses the heart of the mother lest her darling be seized then with some fatal trouble. She dreads the time when the sharp knife may have to penetrate the swollen gum in order to let the tardy teeth through which have refused to come naturally. She fears the possibility of being obliged to give nauseous doses to make the teeth that ought to grow the same as other tissues, just as the hair does, the nails, and every other portion of the body.

No wonder she dreads it, but such trouble ought

not to be. Teeth are a part of the human system designed by Nature to play a most important *role* in life, and their growth should be easy and natural. And so it will be if she is careful to obey, for both her child and herself, the laws of health. Good blood will make good teeth as well as other tissues of the body. See to it that the digestion is perfect. The child must have such diet as will make it so, and warm clothing. I do not mean by that to advise the smothering process, when the poor little thing is not allowed a breath of fresh air. Let it have all of that it can get, but keep the body warm. If it does not digest well a band of flannel should be worn around the stomach and bowels until after the second dentition.

Very often in the desire of young mothers to keep their little ones perfectly sweet and clean, they bathe them too much. This is bad under any circumstances. Vitality is frequently drafted upon to excess, and nutrition so much impaired day by day that the body at last falls into diarrhea, ending in cholera infantum. In all cases it is the result of mal-nutrition. Instead of so much bathing in water better rub the little one, who seems feeble, cannot get teeth, and has soft muscles, with olive oil. Do this every night, and then wrap the body in flannels, bathing it all over only once a week. Now do not look so disgusted at this advice. I presume you do not give yourself a thorough bathing much oftener than that and why should it be necessary to subject your baby to such a trial of its strength and vitality.

Besides rubbing the body with olive oil, it will afford nutrition if given internally. A teaspoonful in hot milk will nourish the baby and help it to live until food can be better digested. I am speaking now of the troubles that are common accompaniments of the teething season, but in *all* bowel difficulties between birth and nine years old, olive oil taken in proper doses, and rubbed externally must result in great good. So far as the teeth are concerned, it is only necessary to keep nutrition perfect, and they will come without any trouble and will not decay after they have formed. Of course when the baby seems so sick that you dare not trust to these simple remedies, it is best to call a doctor.

I have spoken indirectly of indigestion, but with children, if they are kept warm, and attention is given to the bowels, while the mothers from whom they get their food are not overworked, there will be no trouble in this respect. Good digestion will be a certainty, unless there are contrary inherited tendencies.

Perhaps there is scarcely any disease of children that has not at one time or another been attributed to worms, and there is no question but these pests do sometimes produce serious symptoms, yet fatal consequences do not often result. Often too, the so called "worm symptoms" are really simply Nature's signs of indigestion. Several kinds may, however, exist in the intestines, but remember they never find a habitation there if the system is in a perfect state of health.

Children are more liable to be troubled with the common round worm and the pin worm than any others. These may soon be disposed of by a small dose of castor oil given once a day for one or two weeks. Sometimes the mixture of rhubarb and soda, mentioned further on, or senna, raisins and figs chopped together as I have before described, and a small piece eaten every night, will prevent their formation, remove the irritability of the system which give rise to "worm symptoms," and add energy to the functions of digestion. A diet consisting of food of such quality and in such quantity as will be easily digested and assimilated, warm clothing, regular exercise and not too much drink with meals will prove sufficient to set the mother at ease about worms.

Croup, that terror of parents, results from a cold, which, as I have already told you, cannot come to either adult or child unless there is too much food in the stomach or the bowels are constipated. This is always a certainty. When you perceive an attack coming on, lose no time before rubbing the chest, stomach and abdomen with hot oil. Keep warm flannels about the body. Put the feet in hot water for two or three minutes, and give one teaspoonful of oil every half hour to a child six months old for two hours at least.

Spasms, too, are feared by mothers. They may be caused by worms, indigestible food, or constipation. If coming during teething period, remember that teething is normal, and that general conditions are

at fault or there would be no spasms. Give general remedies and take general measures to overcome the causes.

The diseases which must come to children and from which there is rarely any escape, such as whooping cough, measles, scarlet fever, diphtheria, will generally run their course and leave the system unharmed, provided it is kept in a good general condition. Give plenty of drink. Lemonade or anything acidulated is good, or hot or cold water if liked better. Be sure that the stomach and bowels are in good order, and the child kept warm, then these poisons will pass away. In eruptive diseases oiling the body once a day is excellent. It will quiet the child, reduce the fever, induce sleep, and keep the vitality of the little one from being exhausted.

During the first eight or ten years of their lives many children are troubled with sores upon the hands and feet, the face and ears, or some part of the head. Crusts form and the tendency is to spread. You have frequently seen it in what is called a "scald head." Often, too, these sores come around the nails. The child may seem to sleep and eat well and so far as the mother can see appears healthy, and yet there must be poor nutrition even with good food and the best of care. Now I will tell you what to do for this trouble.

Go to a druggist and get ten cents' worth of citrine ointment. Put this on the sores. Wash off the next day and apply again. Put ten grains of

pulverized rhubarb and ten grains of bicarbonate of soda in a half tumbler of water and give one teaspoonful every four hours. Continue the medicine for three weeks at least. If this amount produces a looseness of the bowels lessen the dose or give it only three times a day.

A very troublesome eruption sometimes called *hives* frequently comes out on children a half hour after eating berries, and sometimes after fish or mushy oatmeal. Give the same medicine for this ailment. It is due to poor digestion, manifested in this way.

There are gastric fevers—or they are so spoken of by physicians—and sore throats which attack feeble children often without any apparent cause. Both of these difficulties are the result of over feeding or constipation. Give them less food and but one kind at a meal, in order that the stomach may not have so much to do. If you can persuade them to omit one meal entirely, but drink a good deal of lemonade in its place, or water, most salutary changes will be effected in twelve to twenty hours. A hot foot bath will make the cure more rapid by drawing the blood away from the stomach and liver.

I cautioned you further back about too much bathing of babies during teething time. I want to repeat and emphasize the caution for *all* children whether teething or not. All that is necessary is to keep the body clean and the skin active, and this can be done without a daily bath. Once a week, as I

said before, is often enough. There may be exceptions to this, but they merely prove the rule.

To sum up, let good sense and obedience to Nature's laws, which you have learned by this time, govern you in the care of your children, and they will escape the ills by which the generality are afflicted. Good digestion, fresh air, and plenty of exercise will give good blood, and that always secures strength and vigor.

CHAPTER XXIII.

GIVE US FRESH AIR.

Right here I want to have a little talk about ventilation, which has, in a way, a good deal to do with physical development. No one can have pure blood flowing through the veins who is breathing in an atmosphere reeking with impurities, and that it will be so in every house which is not carefully thrown open for the admission of fresh air once a day at least, is certain.

In the *Christian Weekly* not long ago, somebody expressed in a Josh Billings style, sentiments upon the matter of ventilation in a church, which go right to the point. I quote a part:—

O Sexton!

You shet 500 men, women and children,
Speshily the latter, up in a tite place.
Sum has bad breths, none of em aint too sweet,
Sum is fevery, sum is scrofflus, sum has bad teeth,
And sum haint none, and sum haint over clean;
But every one of em brethes in and out and out and in,
Say 50 times a minnet, or 1 million and a half breths an hour
Now how long will a chersch full of are last at that rate?
I ask you; say 15 minnets, and then what's to be did?

I pnt it to your konshens,
Are is the same to us as milk to babies,
Or water is to fish, or pendlums to clox,
Or roots and airbs unto an Injun doctor,
Or little pills a'e to an omepath,
Or boize to girls. Are is for us to brethe.
What signifies who preches if I can't brethe?

There is a world of truth told in a quaint way here, and it is truth that can as well be applied to home life—of which I am particularly speaking—as to public gatherings. Every one of my readers would be disgusted with the thought of eating what had been chewed over and over again by all the members of the family and the chance visitors, especially if, between times, it had been thrown down on the floor and against the walls to gather up impurities collected there. What a hideous mass this would be! And yet the most delicate woman will breathe the air which has been passed through the lungs of different persons several times, and is, therefore, loaded down with poison, and not only this, but containing the waste particles of matter set free from their bodies, the exhalations through their skins, etc., and will not dream of being disgusted, simply because she cannot *see* the filthy stuff she is taking into her lungs, to poison, instead of purifying her blood.

You must have fresh, pure air in your houses if you want to be well. The ventilation, especially in your living and sleeping rooms, must be constant and thorough. Air, to be what it ought, should have oxygen in the proportion of 21 parts in every 100, the remaining 79 parts being nitrogen, which serves simply to dilute the oxygen so it can be safely respired. Of the air so constituted each individual requires, upon the average, 3,000 cubic feet every hour to maintain perfect health. Dr. Edwards calculated that “a room ten feet square and ten feet high will

contain 1,000 cubic feet. Natural ventilation, that is to say, by means of the window and door cracks, the porous walls, etc., will change and purify the air three times in the course of an hour. So that in order to have a proper supply of oxygen, each individual should have a space ten feet square and ten feet high. If special means of ventilation are used, this air will be changed six times in the course of an hour, thus giving us 6,000 cubic feet, so that it would then be safe for two persons to occupy a room of the dimensions given above."

Now it would seem an easy matter in all ordinary dwellings to afford this space, or the amount of pure air it can contain, to every individual in the family if proper care is taken. The fact is, however, that the rooms, especially the sleeping apartments, are rarely sufficiently ventilated. Instead of throwing the windows and doors all open in the morning, opening the beds, and airing the night clothes, so that the waste particles can pass off, it is kept tightly closed, and the imprisoned filth breathed over again the next night. The evil results are not always so apparent in the healthy male members of the family, whose general out-of-door life through the day does much to counteract the poison they have imbibed through the night, but it is the women and children who suffer most.

A direct draft which can strike them is very dangerous for many people, so that it is essential to avoid creating them while securing good ventilation.

An effective device which any one can carry out in their houses is to have the lower sash of the window raised some four inches, and the space between the bottom of the sash and the window sill filled in with a tightly fitting board. There will be a space left between the two sashes through which the air will enter, passing upward towards the ceiling, and then becoming so diffused as not to partake in the least of the character of a draft.

Some people when building their houses and fully understanding the necessity of thorough ventilation, make the upper part of the upper sash moveable, so that it can be tilted inward, admitting the air above and turning it upward, but the first method is the simplest and quite as effectual.

Be sure and open all living and sleeping rooms at least once a day, and let the air rush through them, until the old poison stuff is expelled and plenty of oxygen taken in its place. One window is better than nothing. A window and door opened opposite each other is better. If that cannot be done raise the lower sash a little and lower the upper one. Then the used up air will pass out above while the pure air comes in below. If you have an open fire place or grate in the room then that will be one of the factors in ventilating. The fire creates a draft which will carry off the impure atmosphere, while the pure rushes in at the window.

Sometimes there is a hesitation about opening the doors and windows because it "lets in so much

cold." Suppose it does and you burn a little more fuel, and thereby save a doctor's bill. It is easier in reality to heat a room which is well ventilated than one in which the air is heavy with nastiness. I know women who, as soon as a cool day comes, shut up every door and window and keep them religiously closed. They are thus sensitive to the change simply because they have been so long in the habit of breathing impure air, that their vitality has run low, their blood contains little heat and they are positively uncomfortable at a temperature which is simply bracing and delightful to one who is in the habit of breathing oxygen instead of carbonic acid gas. Now I do not say such persons could at once endure the exposure of a current of outside air, but let them go into another room while their own is thoroughly ventilated, and then try gradually to accustom themselves to such a change, made, not only once a day, but several times. Persons in ordinary health, however, can feel the rush of fresh air with pleasure, though, as I said before, it is not wise to sit directly in a draught. What is called a cold is, as you have learned, more frequently than otherwise, not the result of a chill, but Nature, aroused by the breathing of more than the usual amount of oxygen, struggling to throw off some derangement of the system, which is clogging the wheels of life.

Of course there is such a thing as being overzealous and unwise in this matter of ventilation. I do not counsel you to sleep with your windows open

when the thermometer is at zero. Nor ought you ever to have your bed stand in such a position as to allow a current of air to pass directly across it. A very good way to do, when it is too cold to leave a crack in the window above and below, and your sleeping room communicates directly with your sitting room, is to throw the doors and windows open for a few minutes before undressing, just long enough to completely change the air. You will sleep the better for so doing. But when you *do* leave a crack to let fresh air in through the night, remember that you must have one higher up to let foul air out.

There are ways in which the atmosphere in a house becomes contaminated besides breathing it over and over. Decomposing animal and vegetable matter makes it vile. A swill-barrel set close to the back door and allowed to stand there half full of putrid matter, slops thrown out close to the house, making a muddy, offensive-smelling place, uncovered vessels in sleeping rooms, dirty water standing in the sinks—all these things are simply abominations. Nor should soiled clothes be stowed away loose in a closet. You can, any of you, tell why by opening the door after they have been shut up awhile. Roll them up when taken off and put them into a covered basket until washday comes, which should be as soon as possible after the family has made its changes of underclothing. Soiled baby clothes should be immediately treated to soap and water, and not allowed to pollute the air with their decomposing animal

matter. This is more plain talk, but its importance is again my apology.

I have said, as yet, nothing about water-closets in close proximity to the house, with poor drainage, or, more likely, none at all, of close, damp cellars, the noxious air of which is constantly finding its way into the rooms above. While they are the prolific causes of sickness, women cannot always control their arrangements, but they *can* regulate the other things I have mentioned, and thus do much towards keeping their homes supplied with pure, sweet air, which will help to give the family physical strength and vigor.

So important is this matter of ventilation, that I cannot resist urging every member of a family to join her efforts with the others to secure it. Small houses are just as likely—and perhaps more so—to have impure air as large ones, because they are more crowded. It is a comparatively easy matter to obtain a steady supply of fresh air if a little attention, combined with good sense, is bestowed upon the matter. In a paper published in the Annual Report of the New York Board of Health for 1882, Dr. F. Lincoln recommends various ways of securing plenty of pure, warm air in a room, one by means of a metal jacket around the stove, with a pipe passing through the floor beneath it, and out through the house wall into the open air. A screen of fine wire should be placed over the opening. This arrangement, or one similar to it, could be car-

ried out at small expense. The idea is to have a constant stream of fresh air entering from out-doors, warmed by contact with the heat of the stove, thence passing out into the room. This is an exceedingly simple method, but an effective one, and there are many others which any one in earnest will soon discover.

The metal jacket I mention because it is an exceedingly simple and inexpensive way of ventilation in houses already built which have no arrangements made for the purpose. If any one is about to build, however, there are many different modes of securing that object, dependent somewhat upon the kind of house designed, its situation, etc. One thing I would strongly advise always, and that is open grates in the living rooms, and in the sleeping rooms, too, if possible, no matter what additional method of heating is employed. Besides the good cheer which the bright, open fire affords, combined with the windows they are most excellent ventilators.

Whatever mode of ventilating is adopted must include an opening for the impure air to escape above and one below for the pure air to enter. Dr. Edwards recommends an open grate in every room, and "at the back of the fire stove an air box or case, which, distinct from the chimney, communicates by an opening with the outer air, and by another opening with the room. When the fire in the room heats the iron receptacle, fresh air is brought in from without, and is diffused into the room at the upper part.'

CHAPTER XXIV.

VENTILATION AND DRAINAGE.

In many houses one of the most prolific sources of impure air is the cellar. Probably not one in ten of my readers have thought of this. It is felt to be a necessity, and is usually a dark, damp place, often with a water closet in its darkest corner, a drain buried under its floor, or perhaps it has no floor, only a few boards laid around for the housewife to walk upon. Windows there are none to speak of, and so no change of air can take place except as the pressure outside forces it in and sends that already there up into the rooms above. A chill as of death strikes you as you go down into its unwholesome depths. Could light and sunlight enter it would not be so bad, but these are religiously shut out. And so, year after year, this polluted atmosphere is conveyed by furnaces, or, in houses where these are not, creeps up through cracks and crevices of floors and doors, to produce disease and death, no one dreaming for a moment that the source of the trouble is the cellar.

Cellars should be constructed as carefully and ventilated as thoroughly as any other part of the house. The floors should be made air and water

tight with some good cement. Coal tar and quick lime make an excellent one for this purpose. Put no drain underneath, but have plenty of windows. If, however, a drain seems necessary, have a pipe laid in boxes, with a door so that it can be inspected at any time. Let it have a sufficient fall to enable it to be flushed with water frequently. In that way a drain may be harmless. It is well to keep the walls white-washed, both for its cleanliness and the light given. Then do not make it a receptacle for any refuse matter, such as old clothes, piles of decayed boards, etc.—things which may be out of sight there, it is true, but their presence will make trouble in ways of which, perhaps, you do not dream. It is more common to make the cellar in city houses a sort of lumber room than in the country, but the latter are still worse through the presence of decaying vegetables. I have known rotten masses to remain until the first of June before the farmer could find time to remove from his cellar the disease-producing mass that ought not to be there a day. One thing remember. A bad smell anywhere in or about your house is a sure indication of the presence of something that health demands should not be there, no matter whether the odor can be perceived in any other part of the premises or not. The poison will penetrate your living rooms and be taken into your system. If there is a place outside, like a water closet, where the excreta from the body is not removed by drainage, which gives forth foul

smells that the wind may bring to the house, fresh earth thrown into it often will do much to prevent bad effects. This is one of the best disinfectants known. Another good thing is to throw chloride of lime into the vault, or dissolve a pound of copperas in a gallon of water and pour it down. The vaults, however, should be frequently cleaned and the filth carried away and buried, so that it can be mingled with the earth and do its part in fertilizing the soil, instead of poisoning the air human beings are to breathe.

It is a singular thing that this subject of drainage and ventilation has received so little attention until very lately. The first real health law was enacted in Great Britain only thirty-five years ago, and it was still later when the movement began in the United States. There is no manner of doubt but that Prince Albert came to his death from a disease produced by a cesspool that was immediately under his favorite study seat. Only a little while ago the magnificent mansion of a member of the House of Lords was examined with reference to the drainage, and it was found to be in a terrible condition. "The basement was honeycombed with cesspools. A number of large brick drains ran in all directions, divided here and there, as a protection against sewer gas, by dip stone traps. These traps gradually became blocked with sewage matter. The flow thus checked, the numerous brick drains, some two feet in diameter, also became choked up and were found full to

the top with black soil that threw up gases on being touched with a spade. Several cartloads of this foul accumulation had to be removed. The largest drain went direct into the sewer without trap, and brought back the sewer gas to the servants' hall by an aperture under the floor, where a sink-pipe was improperly fitted into the drains. A branch drain under the kitchen was leaking. The fall of the drain passing under the kitchen sink inclined in the wrong direction, so that the entire drains had to be filled before any liquid could get away into the sewer." Only think of it.

Some of the costliest dwellings in New York have the vilest sanitary arrangement. One would think, with money at command, the first thought would be to provide for the health. On the contrary, they build long, narrow houses, on contracted sites, with small yards, only large enough to dry clothes in. The golden sunshine cannot get into more than one-half of the rooms through the day. When the windows are opened it is not an air that has been purified by motion that enters in, but the damp, unwholesome atmosphere that has hung heavily between the houses. In such places beautiful pictures and statuary, luxurious furniture and generous living will not bring happiness, for disease and death are almost sure to enter.

Defective plumbing brings many people to an untimely end, for it fills the houses with sewer gas, the most insidious of all poisons. If I could I would

have a law prescribing an extreme penalty for any one who should do a poor job of work in this direction. I would have every house builder obliged by law to provide the best of appliances for drainage and ventilation, the matter to be looked after by proper officers so closely that there could be no question of the proper discharge of this duty, not only to those who are to occupy the house, but to the community in which they live.

Such care is not only necessary for the city but for the rural districts as well, for, strange as it may seem, country houses which could have the benefit of miles upon miles of fresh, pure air, are the poorest supplied with this necessary commodity, and their inmates are the most careless about keeping the sources of contamination away from their dwellings. Many a farmer will have a large, airy, commodious barn, clean, well-ventilated and well-drained stables, while the house, where live his wife and children, is miserably poor and mean, unprovided with a single contrivance for securing good air, without drainage, with no conveniences for disposing of refuse matter; in short, with far less of comfort than he accords to his brute creatures. It is true the latter represent so much money, but if he did but know it, the good health of his family does too, and whatever helps to ward off sickness puts cash in his pocket. One doctor's bill will sometimes represent a summer's profits, and he feels himself an ill used man, blaming fate and sometimes the sick

one for his misfortune, when in truth he has no one to thank but himself. His carelessness or niggardliness in making arrangements for the comfort and health of those depending upon him for these things, were the foundation causes for the trouble.

The country house ought to be far more easily arranged and kept under control in regard to these matters than those in the city, because it can be free from the decomposing filth from other houses which in thickly settled neighborhoods enter one large sewer.

If about to build a new house in the country there is one thing that can be done, and that is to choose a good, healthy location. Let it be put upon high ground, so that everything shall drain away from it. Suppose the wind can reach it better than in that little hollow over there. It will help carry away the impure air, and instead of having all of the refuse matter draining down into the cellar, and keeping the ground water-soaked a good share of the time, breeding malaria to make life miserable, with a little care everything offensive will be carried away, and the chance for good health will be ten times as great.

One thing more. Be sure and put the privies or water closets far enough away from the well or cistern so that there will be no danger of leakage from the former into the latter. Remember that earth is porous. Some soils are much more so than others, but there is no safety in any kind with only a short distance, say any less than fifty feet, between

these necessities of daily life. More disease arises from the pollution of the water in this way than you can imagine. In truth the ordinary privy vault, such as are common upon most all farms and in many villages, should never be allowed. This deposit of the excreta of the body in one place with no outlet, where it is often allowed to remain until so full that there is nothing to be done except remove it or dig another, is simply abominable. A reeking mass of filth, the gases from which are constantly loading the air, to be breathed by the inmates of the house, often so near the back door that the wind blowing from its direction will bring the vile odor to the house. Think of such an abomination! And yet this is not uncommon.

If there is no drainage and that sort of a vault is necessary, let it be made water tight, and, as said further back, be frequently emptied. Be sure too, that the current of ground water which supplies the well sets towards the vault instead of in the opposite direction. Dr. Tracy, in his "Hand Book of Sanitary Information," recommends a movable tank into which the excreta is received and covered with fresh earth every day. Then this can be often removed and the contents put where they can do no harm.

I want to say a few words about the pollution of the drinking water, which often is produced in the way mentioned above. Curiously enough a large majority of people are very careless in regard to this matter. If the water *looks* all right, it is taken for

granted that it is so, when the fact is, that it may be clear and sparkling and yet be exceedingly impure.

If you have any reason to suspect the water you are drinking it is well to have it tested, or test it yourself. This is easy enough to do. Go to a drug store and get eight grains of pure permanganate of potash in one ounce of distilled water. A drop of this solution in a half pint of the suspected water is sufficient. If the drop loses the red color there is present putrid organic matter, either animal or vegetable.

Common sense must tell you that this is unhealthy, and none the less so because you cannot see it. Some of the most active poisons are the most harmless in appearance. The trouble with impure water, however, is that its effects are slow in manifestation, and therefore people do not suspect the cause of their miserable condition.

A very safe thing to do unless you are perfectly sure that your drinking water is free from all contamination is to boil it. Then you are sure that all poison germs are made harmless.

Be sure not to drink water that has been standing in any kind of lead pipe or vessels. It is well to filter all water before using it for drinking purposes.

I have said more on these subjects of drainage and ventilation than I intended in the beginning, but ignorance and thoughtlessness in its regard are so general and widespread that it seems necessary.

CHAPTER XXV.

WASH AND BE CLEAN.

I can imagine the look of disgust creeping over the faces of some of my readers as this admonition meets their eye. "As if we did know enough to do that without being told," say they. "Why, common decency would make us keep clean." And yet I venture to say that nine out of ten of these indignant people either do not bathe often enough or not at the proper times and in the proper manner to have it produce beneficial results.

"Cleanliness is next to godliness," says John Wesley. I must say that I often feel as if I should like to change this maxim into "Cleanliness *is* godliness." Especially is this the case when on a warm summer day I get into a crowded street car, and my stomach heaves under the inhalation of the nasty odors proceeding from the perspiring bodies around me. A man who has been at hard manual labor all day, who is on his way home in clothes filled with the sweaty emanations of his skin since morning, cannot be expected to smell sweet and clean, but I well remember sitting down one warm day, not many months ago, by an elegantly dressed

woman and having my olfactories saluted by an odor beside which sewer gas was almost respectable. I do not believe she had properly bathed in weeks, or months, perhaps never. No wonder that her skin was muddy, and her whole look, in spite of her fine appearance, was unwholesome. I would not have kissed that woman for a farm.

The probabilities are that she was not naturally neat in her personal habits in any particular, and that she had never learned the importance of keeping her skin absolutely clean. There is altogether too much careless ignorance in this respect among all classes of people. The majority take their weekly bath, not because they recognize its absolute necessity in the preservation of health, but in a general way they hate dirt, and feel that is not respectable not to be clean. They look upon the skin as a simple covering of the body, which they are in the habit of washing off periodically, just as they wash their underclothing, but beyond this there is no thought. They will do much to keep stomach, lungs, kidneys, etc., in good order, but do not see the necessity of bestowing time and thought upon what they deem merely a wrapping Nature has put on for the protection of the more delicate parts of the human structure.

Well, it is a covering, but its office is something far beyond that. It is really one of the most complicated and busiest organs of the body, and while, if neglected, it strives hard to do its duty, its resent-

ment will be expressed in various ways. Wonderfully beautiful in construction, its beauty can easily be destroyed by neglect, whether that is the result of either carelessness or ignorance.

Let me tell you something of the mechanism of this visible worker in carrying on the operations of life. It is made up of two layers with a very thin gelatinous substance between them. The outer one is thin and scarf-like. It is called the *epidermis* or cuticle, and its only service is to protect the inner layer, which is named the *derma*, or true skin, and here we come to the curious and important part of the skin. You all know that you can scratch or rub the outer layer, and there is no pain until you get through it. This is because it has no nerves to give it sensation. But underneath the *derma* and passing through it lie millions of tiny blood vessels, and with them the innumerable branches of nerves, both so thick that the point of a pin cannot be inserted without touching them.

If you could see a piece of your skin through a microscope you would discover long lines of ridges and hollows that look more like plowed ground than anything that I can think of. The ridges are divided into little conical elevations, in each of which a nerve terminates or else passes around it; and here lies the sense of touch. In the hollows are the pores that are the openings of the sweat ducts. What are these, do you ask? Well, they are minute tubes which, straightened out, would be about a

quarter of an inch long, that start in the tissue beneath the *derma*, and wind spirally up through the skin until the upper surface is reached, where its open end terminates. The other end is twisted into a sort of knot which is contained in a little sac, and this is surrounded by blood vessels.

The number of these little sweat ducts or glands is astonishing. It is estimated that in every square inch of skin there are at least 2,800, and as in a person of ordinary size there are 2,500 square inches of surface, these glands count up 7,000,000. Only think of it—7,000,000 pores to keep open through a whole lifetime! If these tubes were put together end to end there would be one long canal of about twenty-eight miles. How is that for a system of sewage? Sewage! you exclaim. Yes, it is just that, for through these is constantly passing refuse matter of the body in the form of insensible perspiration, to say nothing of the sensible perspiration which exercise or high temperature produces. This is loaded with dead tissue. The amount of the insensible perspiration is estimated to be, in a healthy person, on an average, two pints in twenty-four hours, or, by weight, one pound and eight ounces, but, as it varies with the muscular exertion, it is hard to fix upon the exact quantity. The watery part passes off by evaporation, leaving the solid part upon the surface to clog up the pores unless it is removed. When left it begins to decompose, and this is what produces the bad smell before spoken of, so that a person who

does not bathe properly carries around a mass of filthy, decaying matter spread all over the surface of the body. Besides, the orifices are blocked up and the free passage of the perspiration is prevented. As this is drawn from the blood in order to help purify that, it is easy to see that its retention must poison the system, or else the other organs are overworked in order to carry it off. Diseases of the kidneys are often produced in this way.

Now remember that when these pores are kept free for the passage through the sweat ducts of the perspiration, two important things are accomplished. The normal temperature of the body is preserved in the first place. You all know that evaporation is attended with loss of heat, and therefore when the watery part of the sweat passes off the body is cooler. Violent muscular exertion quickens the flow of blood, sends more of it around the sweat glands, which in their turn are stimulated to greater action, and the result is a sensible perspiration. In this way the additional heat produced by the quicker flow of the blood is disposed of, and the body kept cool. You have often heard that a person who perspires freely feels great heat much less than one who does not.

In the second place, the blood is relieved of the effete matter which would otherwise poison it. It is also said that this perspiration contains a large amount of lactic acid that, retained in the system, causes rheumatism.

You can all see, therefore, how very necessary it is that not only the face, hands and feet should be bathed often, but that the whole body shall be kept absolutely clean, free, not only from impurities deposited from the outer air, but from those which are sent from within outward, in order to relieve the system.

CHAPTER XXVI.

HOW TO BATHE.

Doubtless many of you are expecting me to say that you must bathe all over, from the crown of your head to the soles of your feet, every day as regularly as daylight comes and goes. I am not going to pronounce any such sentence as that, for, to some of you, it would be death, and I've no notion of becoming guilty of murder. Such a *fiat* has as much absurdity in it as to insist upon everybody's eating oatmeal because for many it is so healthful a diet. The kind of bath, its duration and frequency, are to be regulated by the constitution and surroundings of the individual. For a person of delicate physique to take a cold bath often would be to commit suicide. The shock to the system produced by the sudden rush of the blood from the surface to the internal organs will cause a congestion there that must soon produce permanent disease. The organism is not vigorous enough to afford the strong reaction required.

Right here I want to say that I am not talking to those who are sick and under the care of a physician, but to such as are reasonably well or but slightly debilitated. The bathing which I am recom-

mending is principally for the purpose of keeping the pores of the skin open and therefore free to act, and not for the cure of any particular disease. That must be carried forward under the advice of a doctor who knows what the patient needs in the way of water treatment, since it is so powerful in its effects.

Two things are essential to obtain the full benefit of a bath. These are a warm, well-ventilated room, and one free from drafts. The temperature should be high enough *always* to prevent anything more than the momentary chill caused by the sudden change of circulation and the evaporation of the water from the body. This quickly disappears and a reaction sets in, bringing a healthy glow over the whole skin, but should you continue to shiver and shake, to shrink in repulsion from the water, the ill effects will exceed the good, and persisted in may prove fatal. *Be sure*, then, to have a warm room for bathing.

It should be well ventilated, for the respiration is quickened by the act of bathing, and therefore more oxygen is required for the purification of the blood than when quietly sitting in a normal condition. Of course, any one can readily understand why draughts should not be allowed upon the bather.

A person in good health with vigorous powers may find a cold bath every morning upon first getting up refreshing and stimulating. I have seen those who could jump out of bed in a cold room and get into a tub of almost freezing water, seeming to derive

both comfort and benefit from the process, but the number who can do this without ill effects is very small. I can think now of one old gentleman who has the strange idea that he can nowhere take his morning bath so well as upon the roof of a back porch, and there before daylight, on the coldest winter days, he goes through with his ablutions. Strange to say, he seems to thrive even under this seemingly terrible exposure, but he is an exception, and the day will come when, if he persists in the habit, his system, inured as it is to the cold, will give way to the shock. If cold baths are indulged in they should be short, and the body must be rubbed most vigorously in order to attract again to the surface the blood which has been sent back upon the internal organs. It has also become lower in temperature, and the necessity of vigor and health to raise it again is the reason why cold baths are harmful to persons of delicate constitutions.

For the great majority of people warm or hot baths are most beneficial. The shock to the system in the first place is much less. The combustion going on in the body is increased, as is evident from the quickened breathing, just as it is in the cold bath, but the difference is that the latter stimulates to the increase, while the former facilitates or hastens that going on naturally. The contrast between the two in this respect has been compared to the effect upon a furnace by the hot and cold blast. Both encourage combustion and increase the heat of the furnace,

but the hot blast does the same work by the expenditure of a little more than a fourth of as much fuel as the cold. Both exhaust it, and there must be a fresh supply, but the hot blast is far more economical than the cold. So the hot bath uses up far less of the powers of the body, and therefore requires less vigor to obtain the healthy reaction.

The best way to take the hot bath is to lie in it a few moments and let the heat open the pores while the water softens the dead tissues; then scrub soap all over the body and remain a few moments longer, gradually letting cold water into the tub until the temperature is reduced to that of the skin normally, or considerably lower. Use the towel briskly until perfectly dry. A very excellent thing to prevent stiffness of the joints is always to rub them after the bath with sweet oil. This must be very fine and volatile, and it is, of course, much more agreeable if perfumed. The old Romans and Greeks used to anoint the whole body with oil after bathing, and a very sensible custom it was, as it kept the skin soft and flexible. Before dressing strike briskly with the palms of the hands every part of the body, then put on dry, well-aired clothes, and you will feel a delightful sense of comfort.

Now as to time and frequency. Of course, the most convenient season in many ways is in the morning on first rising. Many people, however, find this difficult. The room is not warm enough, the water not hot, or household duties are so pressing that there is

not time. It is of no great importance, except that two rules are observed. One is *never* take a bath immediately after eating. Let three hours elapse—never less than two. You had better go dirty for once, or several times, rather than risk the consequences of a shorter interval. Why, do you ask? I will tell you, and I want you to remember this if you forget all the rest, particularly you who have the care of children. As soon as the food is taken into the stomach the process of digestion begins, calling the blood thither in larger quantities than when empty. A warm bath summons it instantly to the surface, thus lowering the temperature of the stomach and stopping the work going on there. A cold bath, on the contrary, sends it to that already well-supplied organ in increased amount, and causes a congestion which sometimes proves fatal. It is a *dangerous* thing to do, either way. Children have been thrown into convulsions, and you have all known of persons drowning by being seized with cramp in the stomach upon going in bathing too soon after a meal. If no worse effects follow than retarded digestion you may be thankful, but *that* is a certain consequence.

Another thing almost as important is not to bathe when exhausted, or fatigued to the verge of exhaustion. Remember that bathing of all kinds increases the action of the heart, the rate of respiration, the rapidity of circulation, and the tissue-changes, and it is evident that there is a great call upon the vital forces of the body, which have been already largely

drafted. The best way is to wait until somewhat rested. For the same reason no violent exercise should be undertaken immediately after a bath. The best hours for this duty to the body are, on first rising, about eleven o'clock in the forenoon, three or four in the afternoon, or upon going to bed. Very many physicians recommend the latter time as altogether the best. Take it hot, then get into a warm bed—and, remember, it *must be warm*—and the sleep will be sweet and refreshing. You will wake in the morning with renewed health and vigor. Bathing at this time, it is not necessary to cool the water at the last, because there is no danger of taking cold. The only thing is to wash the parts exposed to the air in cold water in the morning.

Now as to frequency. For vigorous persons once a day is none too often. For those who are not strong, who are delicately constituted, two or three times a week, or even once must suffice. But to keep the skin active the body should be rubbed briskly at least once in twenty-four hours with a flesh brush or towel. One of the best things to give strength is to wring a towel out of water into which as much salt as it will hold in solution has been put, dry it, and then rub the whole body with it night and morning. I speak of what I know from personal experience, when I pronounce this excellent.

If you have no bath tub in the house and no means of getting one, then a large washing tub filled with water will answer the purpose excellently well. But

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even this cannot always be had when wanted. Then take a sponge bath, fullowing out the same general rules as in a full bath.

Some delicate persons are not able to bear the fatigue, and the reaction of a washing of the whole body at one time as often as it seems necessary. A good way to do then is to take a part at a time, all that is requisite being to prevent the pores from clogging, and the system thus becoming disordered. If you rub the body every day with the dry salt towel, you will have accomplished this object largely.

While it is an absolute necessity to keep clean, it is not needful to make a duck of oneself. Some people are fond of going to extremes, and there is such a thing in this direction as well as in any other. We are not aquatic animals, and therefore an excessive indulgence in the luxury of the bath weakens and enervates. I have known persons to stay a half hour in the tub, and perhaps longer, but evil consequences are sure to follow.

Too much bathing will often bring on diseases which it is almost impossible to get rid of. Sometimes there is a breaking out on the surface of the body. Again, the action of the heart is disturbed, and permanent derangement produced. Often there is a general weakening of the whole system, a lowering of its tone, a loss of vigor that other good living cannot entirely repair. It is an easy matter to avoid this. A little watchfulness will tell the story and the bathing be regulated accordingly. The

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great object is, as I said before, to keep the skin clean and active.

Of late years, physicians are strongly recommending a daily air bath to those who are not able to endure the application of cold or tepid water to the body. This is to be taken in the morning upon first getting out of bed. It will have to be a gradual thing to those unaccustomed to it, and is begun first by baring a small portion of the skin, rubbing it the while gently with a towel or hair-cloth mitten. Next day a larger portion can be uncovered, and so on until all the clothes are left off. From exposure for three or four minutes it may be continued for twenty minutes or half an hour, but during the whole time the individual must walk about the room and rub the whole person without cessation. After a few weeks or a month or two the exercise will not be necessary.

Sunlight upon the naked body possesses great remedial power. In fact the value of the sun's rays in preserving and restoring health does not begin to be appreciated. When it is understood that twelve different minerals have already been discovered as entering into the composition of each ray, all of which are necessary to the growth of the human body, some idea can be formed of the importance of getting into the sunlight as much as possible. Plants cannot live in the dark, nor can human beings. Get into the sunshine when taking an air bath. Let it into your rooms even if it does fade your carpet and curtains. Sit in it, walk in it, work in it. Sun baths

have been known to cure the worst possible diseases. If you are too weak to get up, have your bed put where the sun's glory can be poured all over you, wrapping you about like a beautiful robe. You cannot overestimate its importance upon your health.

CHAPTER XXVII.

SLEEP AND THRIVE.

It was an old lesson taught to children that the wicked were kept awake by the reproaches of their consciences, and that the good only sweetly slept the night hours away. The dynamite of modern experience has blown that theory to atoms. Especially since the advent of Peck's Bad Boy upon this mundane sphere have we learned that unadulterated wicked mischief and sound slumbers are not incompatible. The converse is equally true; the best intentioned people are sometimes almost sleepless.

I will venture to say that if three-fourths or even a larger proportion of the invalids in the United States were consulted to-day as to their ailments the cry would be, "If I could only sleep I should be well." Of course they would not unless they obeyed the other laws of health, but this general cry shows how almost universal is the trouble. And a large share of those who call themselves reasonably well, who, in fact, boast of their health, often vainly woo that

"Sleep that knits up the raveled sleeve of Care,"

showing that something is wrong that must be righted, or the future has a store of misery laid away for the unhappy individual.

Sleep is an absolute necessity for health and long life, a sweet, restful slumber lasting seven or eight hours out of the twenty-four. People may force themselves to do with less for a time with seeming impunity, but slowly and surely they are undermining the foundation of their strength, by weakening the vigor of the functional operations of the body. Youth and hope and excitement may carry them through to middle life apparently unharmed, but then the demon of dyspepsia and sleeplessness will as surely seize them as they have violated this law of their nature, or they will go suddenly all to pieces like the "one hoss shay," and there will be no putting them together again.

Exceptional people there are in this as in every thing else, who apparently get along with a very small modicum of slumber. Stories are told of great men who gave but four or five hours to this repair of the body, but the majority of those who have done this joined

The innumerable caravan that moves
To the pale realms of shade

long before they should have done so in the natural course of events.

Every day we do much to wear out the body. So much tissue is destroyed which must be replaced, so much vitality exhausted that must be renewed. Just as a watch runs down and must be wound up in order to begin anew its mechanical life, to last another

twenty-four hours, so do the works of the human body require a figurative winding up in order to run another day. The vital functions of respiration and circulation are carried on during sleep, but far less rapidly, because all voluntary movements are suspended, and little or no vital force is required to keep the internal organs at their work. As a consequence this force is accumulated, stored away, as one may say, for the demands of the next day, and the person awakes refreshed and ready for the duties of life.

So much for the necessity of sleep, which the generality of people recognize only when the power to procure it is weakened or lost. Like many other blessings its vanishing wing emphasizes its value. Now for its philosophy, which may be briefly stated, but which gives the secret of wooing the offended goddess back again.

The secret of a healthy sleep lies in an equalized circulation. During this slumber the brain is largely depleted of blood, and being without its stimulus, is in a state of partially suspended animation or lessened activity. In the waking hours it is never idle, and the harder it works the more blood it calls thither. It controls every movement of the body, even to the winking of the eyelids, and the slightest exercise destroys tissue. Taxed as it is, there must be time taken to repair this waste, and this is while sleeping when every other function of the body, except the two spoken of before as necessary to preserve life, is suspended almost entirely. To have a

sweet refreshing sleep, there must be absolutely nothing in any part of the body to require recognition from the brain. The stomach must not be loaded so as to cause active digestion to go on, or irritation because it is not able to do the required work. The bowels must not be constipated, retaining what should have been passed away—in fact, there must be such a condition as to allow the brain to be for the time unconscious that it has a body to look after, just as a perfectly healthy person is unconscious that he has a stomach. It must be entirely satisfied that all is going on right before ordered to rest and repair losses. Then the pure arterial blood flows slowly through its vessels, laden with the substances which it needs for repairs. It is coursing leisurely but steadily through every other part of the body for the same purpose, but the person is utterly unconscious through these hours.

You understand that this is an entirely different state from that stupor produced by over-exhaustion or alcoholic stimulants. Then the vessels in the brain are distended or clogged with venous or impure blood, which, interfering with its natural functions, brings on a sort of *coma* that gives no real rest or refreshment to the system.

There is such a thing as too great depletion of blood from the brain, which causes sleeplessness or the light slumber that has so little that is refreshing in it. This is the condition when a hearty meal is taken just before going to bed, and a large amount

of blood summoned hastily to begin the work of digestion. The brain is cognizant of what is going on, but it has not enough fresh fuel to supply the demand this action makes, and it is also deprived of the means of repairing the waste that has taken place during the day. It cannot be in that quiet receptive state that is now recognized as its condition in a healthy sleep. That it is thus inactive has been proved in various ways.

The case of a woman is recorded in the *Physiological Journal* who had lost part of her skull, leaving the brain and its membranes bare. "When soundly asleep, it would lie in the skull motionless; when she was dreaming, it became elevated; and when she awoke it became suffused with blood and seemed inclined to rise through the cranial aperture."

The feeling of sleepiness is caused in the following way: The brain becomes conscious of the need—to use a nautical phrase—of laying up for repairs. It contracts the coats of its vessels and sends the extra amount of blood its exercise has called thither into other parts of the body, thus equalizing the circulation, which, at the same time, as all action ceases, becomes necessarily slower and slower. This feeling should come on at the same hour each night, and will do so, if heeded as it should be, for regularity in this is as important as in any other function of the body. Of course you can rouse the brain to activity and send the blood back again by the action of your will, or by the use of stimulants, but every time you do

that you diminish the contractile power of the coats of the vessels, and if this course is persevered in, they will become permanently distended and unable to do the work of sending the blood away in order to bring sleep. This is what has been done when overwork or worry has produced prolonged sleeplessness. The brain cannot rest. Its vessels remained gorged with venous blood and the result is a breaking down of the whole system. The fuel which keeps the machinery going has been exhausted and no opportunity given for replenishing.

This state of things *can* be prevented. Reasonably healthy persons always get sleepy in the evening, when the body and the brain are fatigued and need rest. The demand for this is thus voiced through the brain, and the only proper way, the only true way if health is to be retained is to answer by going to sleep. Just as hunger indicates the need of tissue repair, so does drowsiness show the necessity of repose. And it is quite as important that the call should not be disregarded when the regular hour comes around, and it is heard.

CHAPTER XXVIII.

TO SECURE SLEEP.

Unfortunately few people when young recognize the necessity of obeying this imperative call of Nature to give her a chance to make up for the waste which the day's activities have inflicted upon the body. They go to sleep when they can as well as not, just as animals do, from mere instinct, but if pleasure calls them, or they are interested in their work, they use up the hours of the night remorselessly, and give no heed to consequences. It is with this as with many other hygienic demands of the body. It can be refused with seeming impunity during the years between twenty and forty, but then the retribution begins to come. The over-drafts which have been made must be paid then, and it often reduces people to a bankruptcy of health lasting through life. When more serious cares make greater drafts upon the constitution, the reserved force and vigor is not sufficient to meet them, and restless, wakeful nights, with dreary, dyspeptic, miserable days, terminating in permanent invalidism, insanity or death become the rule rather than the exception. Disease is cumulative, sometimes developing rapidly, and again very slowly, but quite as hard to overcome in the one case as in the other.

There are certain requisites, or essentials rather, for healthful sleep. The first one is what I have already mentioned, *i. e.*, regularity. To go to bed to-night at 10 o'clock, to-morrow night at 12 and the next at 1 or 2 is absolutely ruinous. The brain does not know what to expect, and consequently fails to get itself ready for sleep when the body is ready, and then comes trouble. The best time for retiring is 10 o'clock, and then you can rise with comfort at 6. The hours from 10 to 12 are thought to be those in which most repair is made, and hence the sleep gained in them is named "beauty sleep." Let my young readers take note, for there is more in this than they may fancy. Yet if circumstances compel it is better to retire at 12 and rise at 8 than to be irregular. It does not take much thought to see the philosophy of this necessity for regularity. When the hour comes around in which the body has been accustomed to stop its work and rest, every part of it unites in calling for repose. Gratified, it settles down to gather all the good which sleep can bring. Refused, it rises in rebellion and will not be coaxed into submission later on. Let persons who are troubled with sleeplessness begin their cure by going to bed at a certain hour, whether sleepy or not. Woo the drowsy goddess at the same hour each night, though she frowns at first, and by and by she will yield to your persistency.

I have before spoken of the absolute necessity of fresh air in the sleeping room. If you are tossing to

and fro, unable to lose your consciousness of surroundings, it is often because there is not sufficient oxygen to purify the blood properly, and consequently the brain is worried with what is detrimental to its welfare, and refuses to be pacified. Change the air and you will often go to sleep immediately.

It is not necessary for me to repeat—unless to strongly emphasize the fact—that good digestion is an essential to sound slumber. The brain is a “touchy” sort of an institution, and gets immediately angry if things in its department do not come to time. Effete matter lying in the bowels and poisoning the blood, which thus fails to satisfy the master of the body, an over-loaded stomach that demands attention and summons the blood thither to the depletion of the other parts of the system, thereby preventing the necessary equal circulation, both keep off restful slumber. As a rule it is best not to eat hearty food just before retiring, for these reasons. But there is such a thing as sleeplessness being caused by a demand for food. The brain has not been nourished sufficiently and calls for richer blood, or the last meal has been taken earlier than usual, and the stomach is empty. Some light, easily digested substance taken into the stomach satisfies for the time and sleep ensues. I well remember once when wakeful from exhaustion produced by weeks of broken rest, tossing and turning in unspeakable misery, with my thoughts roaming uncurbed up and down the earth, I seized a cracker lying upon the stand and ener-

getically munched it down. The effect was wonderful. In five minutes I was in the Land of Nod, utterly unconscious of life in this world. The brain had been soothed into quietness by the prospect of more nutrition, and thus the whole body was put to rest. But the cases where food is needed to produce sleep are exceptional. That there are such only goes to show that no cast-iron rule can be laid down in the care of the body, but as in everything else, circumstances must guide the action. Take care, however, that one's wishes are not taken as *the circumstances*, and given the control, for after all there is enough similarity in people to make such simple directions as I have given apply to the great majority.

In the chapter upon exercise, I advised the going through with those given every night before retiring. Perhaps you can now see the philosophy of this advice with regard to its bearing upon sleep. It sends the blood to the extremities, thus drawing the surplus away from the brain and equalizing the circulation. You perceive how much stress I put upon that matter of equal circulation, from the fact that it is the principal factor of a sound and healthy slumber. If persistently wakeful you can often induce drowsiness by leaving your bed, walking around the room, and going through with these gymnastic exercises. Supplement the latter by a vigorous rubbing of the whole body with a soft towel or the hand, then go to bed and you will be likely to soon begin to lose consciousness. If you have some one with you who will

gently rub up and down the spine, the same soporific effect will often be produced.

It is also recommended and will be found to be very effective when sleepless, to soak the feet in hot water three or four minutes just before getting into bed. A little mustard thrown into the water will add to the irritating qualities of this foot bath, for it is a counter irritation to the brain excitement which is desired to be produced. People have found relief from wakefulness by binding a bandage wet in cold water around the wrists. A glass of water as hot as can be taken, or hot lemonade will sometimes produce drowsiness.

I need not tell you that the mind should be free from excitement for some time before retiring. Mental labor ought to be suspended for an hour or two previous, and only light conversation indulged in, or some pleasant employment which will tire neither brain nor body. Some of the poorest sleepers are business men who take their schemes home with them and worry over the various ways and means of carrying them out long after they place their heads upon the pillow. Dismiss as far as possible every anxious thought. Be serene and tranquil and tired Nature's sweet restorer will soon be your guest.

Now as to the use of sedatives to secure sleep. To form the habit of taking something to produce a stupor which is fondly imagined to be sleep, is worse than useless so far as health to the body is concerned, for the last state is worse than the first. Unless there

is some real disease, an obedience to the laws of nature will bring a cure for sleeplessness. It is possible that a complete change of occupation for a time may be necessary, a giving up of mental exertion, and new scenes, but with the right kind of living the end will be attained. Narcotics can do nothing to build up the body.

There are times, however, when some soothing little thing may be taken for a night to quiet the nerves and break up the spirit of wakefulness. But it should not be repeated many times in succession. One of the best among simple remedies of this kind is the following:—

Two drs. hydrate chloral; one dr. bromide potassa; one dr. (one teaspoonful) of white sugar, all mixed in four ozs. of water. Take one teaspoonful and go to bed. Usually sleep soon ensues. If not, after a half hour repeat the dose.

Right here I want to say that the same thing is excellent for neuralgia or nervous headache. Dose, one teaspoonful every half hour until relieved.

These things which I have suggested are all easily done, and will do what is necessary to secure regular, healthful sleep, without which there can be no such thing as vigor of mind or body. Long continued sleeplessness is the sure sign of trouble brewing, if it does not betoken actual disease. It is Nature's signal of alarm, and should never fail to be heeded.

I suppose many of you will think it all nonsense when I tell you that an invalid and a well

person should never sleep in the same beds, but if you will stop and think a moment you will see why this is so. From the body as you have learned, are constant emanations, which in a person whose physical system is disordered must be more filled with poison than from one in health, and they are bad enough at best. These poisonous exhalations will be absorbed to a greater or less degree into the bed clothing, and thence taken up by the sleeper in comparative health, to his own undoing. The latter is also liable to get the breath of the other to a certain extent, and that, too, is deadly. Anyone who is not well should always sleep alone. That evil effects do come in this way is certain. I have now in my mind the case of two young girls, one ailing, the other strong and vigorous. They were put in the same bed, and in a short time the health of the latter began to fail greatly to the mother's perplexity.

The physician learning that the two girls were sleeping together counseled separation, with the result of an almost immediate recovery of the one who was originally well. You have often heard of instances where a husband or wife died of consumption and it would not be long before the other would follow with the same disease. There is no doubt but that it was induced in this way, to start with, and then depressed vitality, broken rest, etc., completed the work. It would have saved the life of the one had they occupied separate beds during the weeks and perhaps months of failing health of the other.

“How cruel that would be,” says some one, “to leave a loved one who is sick, alone.”

That is not necessary. Have single beds in the same room so that you can be near each other. In fact it would be better if the custom of having single beds for everybody could become general. You all of you have had the experience or know of two persons occupying the same bed, one of whom would invariably sleep, while the other tossed and turned the whole night through. The sleepless one was eliminating nervous force while the other was absorbing it. In the morning the first would feel weak and miserable, depressed and irritable, while the latter would be strong and invigorated. The most thoughtful physicians will now say that of two persons who habitually sleep together, one will almost invariably thrive and the other lose, while they have not the slightest suspicion of what causes the difference.

I do not expect many of my readers to accept this view of the matter at once, but perhaps it will set some to thinking, and that is what I desire to do. I am certain conviction will follow. .

I have spoken of the exhalations from the body passing into the bed clothing. This is the reason why it is absolutely necessary that it should all be thoroughly ventilated. Everything about the bed, but particularly the sheets and pillows, ought to be exposed to the fresh air, not one hour, but two every morning. Whenever the weather permits the mattresses should be taken out of doors to allow them to

become perfectly aired and renovated. Hang the quilts and comfortables upon the line and let the wind strike them and carry away the particles of effete matter which are sure to have found a lodgment.

Another thing. Many persons have a fashion of filling in the space under the bed with boxes and bundles. It is such a good place to stow away things when room is limited. Don't do it. Let the air have a chance to pass freely under as well as over your sleeping place. There will then be less chance for dead matter to gather there, to be stirred up to your detriment by an occasional movement.

One more caution. Don't pile the pillows under your head until it is crooked at an angle of forty-five degrees to your shoulders. You will sleep better, and keep a straighter back if you only raise the head to be even *with* the shoulders. Of course there are diseases that demand almost a sitting posture, but I am talking to those who are comparatively well.

All these seem little things, perhaps, or without influence, but they are conducive to securing sound, healthful slumbers, so important a factor in keeping well, and that, as every one acknowledges, is an essential to happiness, and a necessity to secure success in life.

CHAPTER XXIX.

HOW SHALL WE DRESS?

Over a century ago, Lady Mary Wortley Montague wrote the admonition, "Be plain in dress and sober in your diet." This was no doubt intended particularly for women. In fact, it was a satirical summary of advice given by a man to the gentler sex, and contained a truly masculine theory to which in practice he offers little encouragement. The plainly-dressed woman is not the one who attracts his attention, or to whom he gives his admiration, and to this very thing is chargeable a large share of what is termed woman's extravagance. It is she who enhances her charms by tasteful dress—other things being fairly equal—who carries off the honors in any gathering, and knowing this, it is not strange that pretty things have a wonderful fascination for the feminine mind. And to be well dressed *is* an important affair, both for health and beauty. The very consciousness of looking one's best, of pleasing the eye of those who see her, will send the blood dancing through the veins, make life look brighter, and produce a general exhilaration that will promote every function of the body. Therefore, I say it is right to spend a reasonable amount of time and

money to make dress tasteful and pretty, and the woman who neglects to do so, through a false idea that it is a trifling matter, will make a mistake which she will some time regret.

It is not, however, this view of the subject which I want to talk about now. The dress of women needs reform in so many ways in order to secure and preserve health—which is the great beautifier—that all else connected with it sinks by comparison into insignificance. The improvement made in the last few years is wonderful, and gives great hope for the future, but there is room for a vast deal more, and especially among that large army of women who are outside of the reform influences now at work, and yet who are enduring daily martyrdom from unhealthy dressing.

The primary object of all clothing is to secure warmth for the body. That this necessity is almost purely artificial does not make it any less emphatic. Even though the Indians in the cold regions of the Northwest, and the Africans in their heated clime, go without clothes and are comfortable and happy, long years of custom have made it imperative upon people in the temperate zones to dress themselves according to the weather.

Two things should be aimed at in purchasing materials for winter wear, *i. e.*, lightness, and power to retain heat. It is not the garments that produce warmth, but it is their power of preventing the escape of what is manufactured in the body. Those

made from animal growth, such as wool, silk, furs, etc., are much poorer conductors of heat than those of vegetable origin. This gives the key, then, to the materials that should be used at different seasons of the year. For undergarments during the cold season wool should be worn, unless you can afford silk, which is still better. These woolen garments keep in the heat, and absorb the surface moisture, which would otherwise evaporate and cause a sensation of coolness. As to whether you should wear wool undergarments all summer or not, is a matter that you can best judge for yourself. If your blood is thin and you are apt to feel every little variation of temperature, then light ones should be retained. Indeed, there are many people who will say that wool is cooler in the hottest days than linen or cotton, for while they prevent the radiation of heat from the body, they also keep out the caloric of the outside air. It is certain that the wearer is not so apt to be chilled, for the moisture of the skin is at once absorbed instead of being allowed to evaporate.

It is a great mistake to wear heavy clothes at any time. Many people seem to think that warmth and weight are synonymous, but that is not so. Avoid loading yourself down with garments which simply exhaust the body in carrying them around. I have lifted dress skirts, the weight of which taxed my strength barely to raise from the floor, and yet women wore them who are delicate and weakly, and can scarcely go up and down stairs without exhaus-

tion. This is emphatically wrong. It wastes the strength uselessly, and brings on absolute disease. Study to make every article you put on of the lightest possible weight, consistent with good material. Take a lesson from animals whose woolly coat is so warm and yet so light.

Another thing of great importance and fully equal to what I have just spoken of is that of making every part of the clothing so as to give free movement to the body. The dress of women in this respect is hideous. The waist is drawn in, the arms are bound down, the feet are cramped, and, in fact, it seems as if the study had been to render them utterly helpless. Most of you will say at once, "That does not apply to me; I do not wear my clothing tight." Perhaps you do not call it so, and yet if you cannot move with perfect freedom, if you cannot fully inflate your lungs without pressure, if you cannot raise your arms easily above your head, if there is any sensation of being bound or impeded in any way, rest assured you do not dress as you should.

I imagine I hear some one exclaim, "What guys she would make of us!" Not a bit of it. Dresses can be made to fit beautifully, to be shapely and elegant without being tight. Anything which in any way interferes with the operations of Nature, which obstructs respiration and circulation, that prevents the exercise of every muscle in the body, hinders development, diminishes vigor, and lessens both health and beauty. One of the most sensible

things in the way of fashionable dress that has ever been introduced is what is called the "Jersey." Close-fitting and elastic, it does not confine the body in any way. It allows the arms to move freely, to be lifted high above the head, to be thrown in any way without any sensation of drawing or any fear of ripping. Sancho Panza says, "God bless the man who invented sleep." I would add to that—"and the Jersey."

You will, doubtless, be surprised when I tell you that I do not consider corsets an unmixed evil. They can be made so, as you all know, by improper lacing, or stiff bones, but properly made and worn, unless in the case of some particular form of disease, they may not be objectionable. If you wear corsets, get good ones, of fine shape, with flexible bones, that will bend and not break. Have them low in the bust and wear them loose.

I have heard it said that the corset supported the skirts that were buttoned around the waist. This it cannot do unless it has straps passing over the shoulders. These garments really press it downward, causing it to crowd the abdominal organs upon each other. No such work should be expected of it. Its only duty is to give shape, while the support must be afforded in another way. For there must be support. More disease among women has been caused by hanging heavy clothing from the hips than can be estimated, and it is well that the war for reform in this direction has begun and is carried along with such vigor.

CHAPTER XXX.

MORE ABOUT OUR CLOTHING.

I have said that lightness and flexibility were necessities in women's dress. Now I want to do some plain talking about another matter.

Have any of you ever watched from a window the crowd of pedestrians passing upon a rainy day, and noticed the difference in the way in which men and women get over the ground? If not, do it. Choose a rain storm, because then both are alike burdened with umbrellas, waterproof and rubbers, though the latter may be omitted by man, because the soles of his shoes are so much heavier. He strides along with quick, light step, one hand swinging free at the side, the other carrying the umbrella, moving on with ease and elasticity, unmindful of the downpour, for the most it can do is to dampen the bottom of the pantaloons, which can be quickly dried, without detriment to his health. Even though the wind blows, it matters little to him, for bound in no way by his dress, he can make headway in its very teeth with little difficulty.

Look at a woman under the same circumstances. The wind ties her skirts about her legs, and one hand is constantly occupied in keeping the refrac

tory garments in order, while the other holds the umbrella. Hampered in this way, she hitches along rather than walks, and by the time she has gotten over half a mile of ground, her strength is well nigh exhausted. What wonder! Wrap her arms up in heavy skirts as her legs are, and then set her to washing, sweeping, cooking or sewing, and see what the result would be.

It is a fact that not one woman in ten walks with any grace or freedom in either foul or fair weather. Of course, high heels and tight shoes are responsible for a part of the hitching, shuffling, wiggling gait that we see so much upon the streets, but the heavy skirts binding and hampering the lower limbs, tiring the body with the mere effort required to carry them, must answer for far more. "Go out into the air and sunshine," says the doctor to his patient. "Walk every day." "I wish I could," she groans in reply, "but it *kills* me to walk."

An examination of the kind of clothing she has hung upon her hips from childhood will tell why it "kills her to walk." First come the drawers, which are probably of muslin, though there may be under ones of merino or flannel. If only the muslin ones are worn, then the deficiency in warmth must be made up by more skirts. Next to the drawers come one or two flannel skirts, that stick and wind and bind. Possibly a muslin skirt is worn over these, then a heavy felt or balmoral of some kind, and, finally, the dress skirt trimmed and puckered

until of itself it is a burden to carry. And the majority of women fasten all these things around the waist by bands buttoned together, and there they are dragged down by the weight, their legs bound by the wrapping folds until it is impossible to move with any freedom. Contrast this dress with that a man wears. There seems no use in multiplying words in regard to it, for common sense must mark the difference and show what an inestimable advantage men possess over women in this respect.

“Well, what would you have us do?” asks some woman; “surely not adopt the masculine style of dress, *a la* Dr. Mary Walker?” No, I would not, though, honestly, I think even that would be preferable to the miserable, weary invalidism of so many of the American women, part of which is caused by this mode of dressing. But the same good results may be reached without any such violent innovation, and I will tell you how.

In the first place, it is necessary for health that the feet and legs be kept warm, and this can be done without flannel skirts. The following is the method I would recommend, and experience has shown me that it is comfortable and healthful :

First comes a union suit of merino or flannel underwear, which consists of drawers and vest together. A very good article can be purchased for two dollars and a half, and two suits will last easily for two winters. If you want them of red flannel, or feel that you must get them cheaper, it is easy

enough to make them yourself by cutting the lower part from your pattern for muslin drawers and the upper part from a waist pattern, which must be loosely fitted. Face a piece of muslin around the waistline, and sew six buttons on for the next garment I am going to tell you about. First, though, I want to say that the *wool* stockings you should wear ought to be long enough to come up over the knee outside of the drawers, and then be fastened up by an elastic band which is buttoned at one end to the tops of the stocking and at the other upon one of the buttons before mentioned at the waist, or, if you prefer it, to straps which pass over the shoulders.

The next thing is a second pair of drawers to come to the knees. Now, do not be horror-stricken, for this is the way you are to keep warm, and they are not half so clumsy as so many skirts. I made mine of silk because it is a poor conductor of heat, and because it would permit the dust to fall off, but you can use a cheaper material of smooth texture, if you like. Line these with red flannel, and put buttonholes in the band to button them upon the union suit. This will make the weight of all these garments come upon the shoulders. These outer drawers do not need washing more than a balmoral skirt, as they should be made so as not to touch the person anywhere.

A cotton skirt, which is cut in one with your corset cover, is worn over the corset. This should not be very long, and is all that you need besides

your dress skirt. Suspend that by straps from your shoulders, or, what I like better, button it to the corset cover on buttons placed at the bottom of the waist for that purpose. In the summer, with light dresses, less drawers and more skirts are necessary, and these can be buttoned on in the same way. What is better still for any extra skirts worn is to have a band faced on to the corset cover skirt, which itself is made to fit the form, about four inches below the waist line, and button the skirt, made accordingly, on there. This is better, because it does away with the extra wrappings around the body, which are needless. There is no shadow of reason why the abdomen should have so many more coverings than the limbs. In fact, one great trouble is the excessive heat, which often weakens the back and brings on real disease.

If you think that the one cotton skirt is not sufficient to throw the outside one out around the bottom, you can do either of two ways: Have a skirt made to button on to the corset cover, of cambric faced across the front and sides to the depth of a quarter of a yard with hair cloth. Up the back put two or three broad box-plaited flounces of the same stiff, light material. This will throw the outer skirt out, and has very little weight.

The other way is to have the dress skirt faced with something stiff and a flounce of the same sewed across the back, so as to be always ready. I like the first arrangement the better.

Dressed in the way I have described, none can tell the difference from the usual style of women's apparel, while you will be able to walk with freedom and lightness, and improved health will be the result. It may be some trouble to make the change at first, but after you have once tried it there will be no going back to the heavy skirts, with their numerous bands, dragging down from the hips, and taking away all of the elasticity and grace which free motion would give.

An objection may be made to the union undergarment—and, indeed, it has been—that no change could be made in the upper part without an entire change of the whole. This may be obviated by buttoning them at the waist line, where I suggested the facing for the buttoning on of the outer drawers. Then either part of the garment can be changed at pleasure. These minor things can be arranged by the good sense of the wearer, the principal object being to make the clothing as light as possible, to have what weight there is suspended from the shoulders, and to have it loose enough to yield readily to every movement, voluntary or involuntary, of the body. These things attended to, and the health of women would be materially better, no matter what the press of circumstances may bring to them of exhausting physical or mental labor.

One thing more I want to speak of. Weak women, in walking, frequently find that the weight of their clothes and the standing upon their feet pro-

duce a dragging down sensation, as if every organ of their bodies were pulled out of place. No doubt they often are, at least those in the abdomen. Especially is this true of such women as have gathered in and around their intestines those extra layers of fat spoken of in a previous chapter. They frequently feel after walking as if all going to pieces, and, without suffering absolute pain, the nervous discomfort of this "dragged down" sensation is almost unbearable.

Much of this, if not all, can be remedied by following out the laws I have given you, but while you are doing that you will find a great benefit from wearing a bandage, pinned as tightly as possible without being uncomfortable, around the lower part of the abdomen. Make it in this way: Take a piece of strong muslin, about twenty inches wide and long enough to pass around the largest part of the hips and abdomen, and lap over for two inches. Fold this together the long way, turn in the edges and sew it around the three sides. You have now a straight band ten inches wide. Take up a seam or dart about three-quarters of an inch wide in the beginning exactly in the middle, and slant it down to the opposite edge. The wide part is on the upper edge. Half way between that and the ends take up a similar dart, only have the wide part begin on the opposite side from the first and slant to the other edge. Then it is ready for wear. Two or three of these will give you a sufficient number of changes.

Some find it very difficult to keep them from

rolling up, and then, of course, they do no good. You can obviate this by putting a broad band, say eight inches wide, on each lower side of the bandage, at equal distance from back and front. Have these come half way to the knee. Slant them until the lower edge is about four inches across. Put two pieces of elastic upon each and button them to the stocking. Another way is to put a broad band on the middle of the back, narrowing it down to a length sufficient to be brought under and buttoned to the middle of the front. It is easy enough to experiment and find the most comfortable way.

Where considerable walking is to be done it is well to put a thin bandage, wet in cold or hot water, as you like best, or does most good, under this outside one. Those of you who are obliged to be upon your feet a good deal will find this a great relief, changing it when it gets dry. It will diminish the heat in the back and give more strength. A little salt in the water is a good thing, and some alcohol is still better. If the principal trouble seems to be in the lower part of the back, put the wet cloth, folded two or three times, over the "burning place," instead of wearing it around you. In either case you must not neglect the dry bandage over it, if for no other reason than to prevent getting chilled, a thing to be always carefully avoided.

These little things are some trouble, but they will save you much pain, and your strength and endurance under necessary trial will be frequently doubled.

CHAPTER XXXI.

FUN VS. PHYSIO.

Pit the two against each other, and fun, as a rejuvenator of the human body, as a restorer to health and vigor, will invariably come out ahead. Many of you will remember the story of the man who was slowly choking to death from a swelling in his throat which the doctors could not reach, and when thought to be almost at his last gasp, the distressed face of an old colored servant so aroused his sense of the ludicrous that he burst into laughter, the swelling broke, the blood started afresh upon its journey, and he got well. This seems an extreme case, but a hearty laugh has effected many a cure of bodily ills, only its operations have not been so immediately visible.

Intelligent farmers know that the same crop year after year upon land wears it out unless he frequently uses fertilizers, that is, supplies the constituents which have been exhausted. It must have not only the nourishment which the changing seasons regularly bring, but something besides, in order to give a vigorous growth to the seed planted thereon. But these same intelligent farmers rarely employ their excellent reasoning powers upon the human

plants which are living in their homes. They do not think how week after week, month after month, year after year of an unvarying round of labor, with scarcely any change except what the seasons bring, will dwarf, if it does not kill—in other words, that the monotony of farm life is the cause of the census betraying mortality among farmers' wives, to say nothing of the ill-health and insanity so prevalent with them. It is not the hard work, as many assert. It is the lack of amusement, of variation in a life that grows unutterably wearisome in its entire lack of aught to turn the thoughts into new channels, to bring good cheer and brightness into the days laden with dullness. Take the ailing and complaining wife or daughter away for a few days or weeks into new scenes, and see how rapidly she will pick up health and cheerfulness. If you cannot leave home—although usually, coming right down to the bare naked truth, the *cannot* lies in the imagination—get up a neighborhood picnic, or go off on long drives around the country, taking in large drafts of pleasure and fresh air at one and the same time.

I speak particularly to the farmers, because in cities this monotony that kills is not so frequent among the people of corresponding social position. There is more variety, more to see and enjoy without much effort. But there is a class there, which is toiling in factories, bending over the needle, working in cellars and garrets that suffers from lack of anything bright or pleasant in their lives.

Some time ago I saw a spiritless little woman, with muddy complexion, washed-out eyes, and a face so thin and drawn that it made my heart ache to look at her. There was no snap, no sparkle about her. Her days were full of the most uncongenial toil, grown so because never varied and never ceasing; her surroundings, which were measurably pleasant, had grown distasteful to her from constant familiarity, and she was fast becoming a candidate for the hospital or insane asylum. I saw her a few months later, but passed her unrecognized upon the street. In place of the sallow, dispirited looking woman, here was a plump, bright-faced creature, with clear complexion, bright eyes, a quick, energetic step and an air that told how much life meant in her sight. Do you wonder what caused the change? A wealthy relative had given her an outing of several weeks of travel and seaside pleasuring, with these results.

Everybody is not fortunate enough to have a wealthy and generous relative, say you. Very true. But the most of you could manage a little recreation, if you would, and you *must* if you want life to be worth the living. I believe most thoroughly in work. The busy days are the happy ones, but there must be those interjected which lead the mind away from labor, and give it something new to feed on. Unvaried, monotonous work becomes drudgery; the brain grows weary and depressed; digestion is impaired, and the bodily health suffers. Do not, then, grudge the time spent in recreation, even though it

seems to involve a pecuniary loss. Better have that, and get some return in the way of pleasure and health than to pay doctors' bills.

So much for recreation and for fun, also, real downright, old-fashioned fun. Remember that they are necessary in their way as much as fresh air and exercise. They will prolong life and make it worth prolonging. Every human being, every man, woman and child needs the exhilaration of pleasant changes, in order to have good digestion and its consequent—good temper.

In any case, whether you can take all the recreation you may want or not, *do not worry* about little things. No, nor great ones either, if you can possibly help it. It has been said so often as to be a truism that worry kills more people than work. Keep that in your mind. Remember that every hour spent in worrying retards digestion, diminishes vigor, and draws lines in your faces, while each one spent in pleasant thought and merriment has the contrary effect.

“How can we help worrying when we have things to worry about?” you question. Stop and ask yourselves if half, and perhaps the most, of these things are not purely imaginary, or what you are afraid may *possibly* happen. “Do not cross a bridge until you come to it” is a good old maxim. Do what you can to prevent an evil, and then banish it from your thoughts. You cannot? Yes, but you *can* to a great degree. The specter may return in an unguarded

moment, but, persistently driven away, his visits will be few and far apart. Treated with respect, coddled and nourished, and he will become a permanent inmate of your home, greatly to your injury.

You may have a skeleton that has nothing shadowy about it. Push it into a closet and shut the door to as closely as possible. It will sometimes work out and gibber at you, but if you are firm it can be made to behave with a semblance of propriety. In plain words, while a real trouble cannot be put entirely away, the less you allow yourself to dwell upon it, the less will its presence affect your health.

I wish I could impress upon you the importance of cheerfulness and hopefulness to your physical well-being, and how largely it depends upon yourselves to make them your permanent companions. Agitation, anger or grief will check digestion and untold evils will follow. Throwing aside the idea of duty to those around you, put the necessity of not worrying upon the ground of *self-preservation*, for that is what it is—and then laugh and grow fat. Do not say it is impossible, even though a great sorrow has folded its black wings over you. Peep out to see the sunshine and by and by, it will reach and warm you.

I have seen people who seemed to act as if the whole of their world must be made to suffer what they suffered while under the shadow of a great grief. To smile would be sacrilege; to try to put their sorrow out of sight an insult to its cause. It was really

the most arrant selfishness. There are others who simply sink under a terrible blow because they have not, or think they have not, the strength to battle with its horror. To both the result must be the same: Injury to health in the present and very likely for their whole future.

And you who are troubled without cause, who are simply discontented with your surroundings, remember that fun is better than physic, that you are needlessly destroying your good looks as well as your health, and that if you want to live to a good old age you must find the sunshine, and shun the shadows.

XXXII.

LOOK OUT FOR THE EARS.

What an absurdity! say you. Who ever thinks of their ears unless they ache, get frozen, or the hearing begins to grow dull? Exactly, who does?—and that is just what I want to talk to you about. Not that there is much that you need *to do*, but a great many things that you *ought to leave undone* which are done. I do not propose to give you remedies for diseases already seated, for the simple reason that no one should do this who does not thoroughly understand the individual trouble to be treated, but I want to tell you how to prevent their coming.

The ear is a most delicate organ, and extremely sensitive to adverse influences. Many a child has lost his hearing through a sudden blow upon the side of his head from an angry parent or teacher, though the mischief done was not apparent until sometime afterward, and perhaps was never traced to its real cause. Ear pulling, ear boxing, and such little pastimes should never be resorted to under any circumstances, for, instead of being a harmless way of punishing, they may inflict an irreparable injury.

I shall not enter minutely into the structure of

the ear, it not being necessary to my purpose. Suffice it to say it has three parts :

The external ear, comprising what is commonly called the ear, a passage back from that, named the auditory canal leading to the drum-head, and the drum-head itself, which is a thin membrane, circular in form and about a quarter of an inch in diameter, that forms a partition between the external and middle ears. I want you to note the situation of the drum-head particularly, and its extreme thinness, it being only about 1-250 of an inch thick.

Next comes the middle ear, or tympanum, which is an air cavity, and contains the smallest bones of the human body. Through it pass two nerves, one running to the face, and the other a branch that goes to the tongue.

Lastly, the internal ear, or labyrinth, so called because it has never yet distinctly been understood what purpose it answers in hearing.

The middle ear is the seat of most of the diseases that affect the hearing, it being in all of its parts the most delicate and complicated in structure. It is probably for this reason that it is protected by the drum-head partition before mentioned. This partition effectually prevents the passage of anything into the inner parts of the ear, so that the alarm which is felt when anything enters the auditory passage is needless, because it can go no farther than the length of it—about an inch and a quarter—and will probably be stopped at the middle, which is

narrower than either end. If it stops there, usually it will work out of itself, but if it should pass the narrow part, it will have to be taken away. Right here comes the danger. People go to work to pick it out, and in nine cases out of ten perforate the drum-head, sometimes tearing it all away and leaving the middle ear exposed to the air and consequent disease. Let it alone—unless the pain is unbearable—until a doctor who understands the anatomy of the ear, the length of the canal, etc., can take it out without injury. A bead, button, or any such smooth, small object, can do no harm anyway, and has been known to remain for years without injury. The pain that sometimes results, which is supposed to be caused by the object, is really often produced by unskilful poking around for it; lacerating the auditory canal, tearing away the delicate drum-head, and causing a general inflammation to be set up. *Never* allow an unskilful person to attempt to take anything out of the ear with pieces of wire, a hair-pin, or any other hard substance, but go to a doctor and have it harmlessly extracted.

Right here I want to enter an emphatic protest against any picking at the ear, whatever. Many people have a way of enveloping a pin head with their handkerchief, and then swabbing the ear out with it for the purpose of cleaning it. Or they scratch it with an ear-pick, or twist the end of a towel and run it in as far as possible, then work it around, imagining that they are doing a good thing. On

the contrary they pack the wax and dry skin back into the ear, to say nothing of the injury often done by scratching and scraping. The result is frequently the formation of a chronic ulcer on the drum-head or in the auditory canal, a growth of granulations with a foul discharge, and finally the bones become affected.

It is a practice frequently resorted to in cases of earache to roast an onion, take out the core and shove it into the ear. Relief frequently follows and the cure is ascribed to the special virtue of the onion. In fact it was simply the warmth which brought a cessation of pain, and the end would have been as quickly reached by making a poultice of the onion or anything that will retain the heat and binding it loosely over the ear. Then there would be no danger of pieces of the onion core remaining in the canal to decompose, and cause inflammation, as in the other case.

Back of the outer ear lie the nerves. Heat applied there or in front, rubbing with laudanum in both places, will often allay the pain. Laudanum may be dropped upon the poultice when it is applied. It is also a common custom to drop all sorts of hot things into the ear or to syringe it with warm water. *Never* do either unless under the direction of a physician, for while you may sometimes apparently do good, more often the final effect is irremediable harm. The very construction of the ear, the situation around the outer part of the auditory canal of the glands to secrete the bitter wax, the purpose of which is evi-

dently for protection against the incursion of insects and to prevent the growth of mould, shows that Nature did not intend foreign substances to be introduced unless with the greatest care.

Now you will understand me that I do not say that a syringe full of *warm* water—*never cold*—or a drop or two of sweet oil or glycerine never do good, but simply that their indiscriminate use does harm. It is something to know how to employ a syringe effectively, and mothers who live at a distance from any physician would do well to learn, in case of an accident requiring immediate action. Insects sometimes enter and cause a peculiar irritation that produces convulsions. In such a case there must be no delay in the use of a syringe, but if you do not know how, you may cause yourself or child an infinite deal of trouble hereafter. In addition to the caution in regard to never using cold water, I will add never throw the water into the ear in jerks, but softly and steadily.

An old physician once quaintly said: "Never put anything in your ear smaller than your elbow." Of course he meant to give the same advice that I have given, and which the best aurists of to-day will sustain me in.

Very cleanly persons are liable to do themselves injury by rough washing. The bathing of the ear should always be extremely gentle, with great care not to get the soapy water into the auditory canal. For this reason a soft cloth is much better for the

purpose than a sponge. Dry the auricle or external ear gently and also the bones around it, but make no effort to clean the wax away as far into the passage as you can see. The skin of the ear grows outward, and the extra wax, if there is any, will soon come within the reach of the washing described.

In very cold weather the ears ought to be protected by a light ear-muff or woollen scarf, or women can use a veil, which is generally sufficient. These things should be loosely put on, so as not to press the ear down to the head. This should be particularly guarded against with children, as soreness behind the ear is often produced by the perspiration excited in this way.

I cannot speak too decidedly in regard to what was referred to earlier, namely, boxing the ears. Concussion takes place, the power of which is often greater than the delicate membrane of the drum-head can resist, and the consequence is, it bursts. If this be all, it is not always serious, for a healthy membrane will usually heal quickly, but it often affects the nerve, paralyzing it, and in the end brings on permanent deafness. A sudden explosion or unexpected noise may produce the same effect. Of course the latter cannot always be avoided, but blows are never necessary.

Boys often produce an inflammation of the eardrum by getting cold water into the ear when in bathing. This should be well guarded against, for the result is almost invariably hardness of hearing in

time. Neither cold water nor very cold air should be allowed to pass the outer portal of the organ of hearing.

Diseases of the ear should never be neglected, but they need most careful and delicate treatment. With the ear, as with the eye, only they who by study and experience have qualified themselves for the work, should be permitted to meddle. Quackery here, or ignorance, may produce the loss of one of the senses that seems very necessary to make life pleasant.

CHAPTER XXXIII.

TAKE CARE OF THE EYES.

Everybody recognizes the important part the sight plays in the happiness of this life, and yet there is hardly anything which is used with such prodigality. To be blind, to be shut out from all the beautiful things of the world, to feel but not see the blessed sunlight, to hear the rushing wind and falling rain, but with no sight of the fleecy clouds, the waving trees, or the blue of the heavens, to catch the fragrance of the flowers, with no view of their loveliness, to hear the voices of loved ones, while darkness rests upon their faces, all this is horrible, and yet most people run the risk of bringing about this horror by carelessness and persistent over-taxing of the eyes year after year. It seems to be the impression that these organs must take care of themselves.

No doubt the general health has much to do with the condition of the eyesight. Anybody will notice how the eyes give out when sickness has impaired the bodily strength. A severe headache will often cause a dimness of vision, which, however, is frequently disregarded, and the person works right on, determined, as he says, not to give up. It is not a question of yielding to bodily pain, but of perma-

nently injuring the eyes by forcing them beyond their strength. They must be favored at such seasons, or their power will be impaired beyond remedy. It may not be felt or noticed at the time, but in years to come such abuse—for that is what it is—tells sadly. No one would think of using a weakened arm to lift heavy weights, but the eyes must do duty under all circumstances.

I do not propose to enter into any minute description of the anatomy of the eye. As you know, it is an exceedingly delicate organ that needs to be treated with even more consideration than the ear. First, we have the eyelids for protection. They are two pliable folds of skin, the upper one of which can be moved at will and made to shut down and cover the eye completely. Upon their edges grow the eyelashes, which help still farther to keep out foreign substances. The eye itself is spherical in form, and is placed in a bony socket. You know how it is guarded upon all sides in this way. There are six muscles attached both to the outer surface and to the bones of the socket, by which it is moved in all directions. It is composed of three layers or coats lying one over the other, and containing certain humors that act as lenses. The optic nerve enters at the back and spreads out over the inner coat or retina.

The outer coat is called the sclerotic, or, as it is commonly named, the white of the eye, and is tough and dense, covering about four-fifths of the outside,

the other fifth being a transparent membrane that bulges out in front like a watch crystal. It seems to be fitted into a little groove, is called the cornea, is without bloodvessels, and through it we see the pupil and iris. The pupil is the round black spot in the center of the cornea, and is really the opening through which the rays of light pass to form the image of the object looked at upon the retina or nerve surface, and be conveyed from there by the nerves to the brain. Around the pupil is the rim of color called the iris, which contracts or expands as less or more light is needed in the eye.

Next to the sclerotic coat comes the choroid coat and inside of that the retina, which, as said before, is the nerve surface, and upon it all images are formed. Within these coats are the aqueous and vitreous humors, the former in the front part of the eye, the latter in the back part, and between the two the crystalline lenses.

I have run over these parts of the eye hastily and with no intention of enlarging upon the work of any one of them, except, perhaps, that of the iris or pupil under the influence of the nerves, which are of exquisite sensibility in the organ of vision, as, indeed, they need to be.

It is of the greatest importance that just enough light be admitted, and it is the nerves which tell the iris when to contract or expand in order to secure the right quantity. You have noticed how the pupil grows small in a very light room and large in a dark

one. Go from one into the other and you can hardly see at first, until, as you say, your eye has become accustomed to the change. What really happens is the contraction or expansion of the iris, and as this cannot be accomplished on the instant, but must be done gradually, dimness of vision is the result. Right here comes in a warning word. Be careful not to expose the eye too suddenly to a very brilliant light, nor to go from one extreme to the other quickly and several times in immediate succession, as the result may be a permanent weakening of the muscles of the iris.

It hardly seems necessary to say do not read, sew, or work in any way requiring close vision by a waning light, and yet so many are careless in this respect, particularly young people, that it cannot be too often reiterated. You are straining your eyes, though you may not be conscious of it, taking away their power of recuperation, and years hence will reap the consequences. *Never* allow yourself to do it, no matter if it seems to be done without pain or weariness. And whenever there is a sensation of fatigue at any time, let the eyes rest. If you feel a disposition to pass your hand across them to rub away a mist or dimness, stop instantly whatever you may be doing, for danger threatens.

I give you the same advice with regard to the eye as to the ear. Let no bungler do anything for it. Put nothing in it, unless you know absolutely what it is, its strength and harmlessness.

If anything that appears serious is the matter go to a good oculist. Many a person has impaired the sight by taking some one's say-so and using a medicine that was not needed. Bathe the eyes often in hot or cold water, whichever seems to agree with them best. Wipe them with a soft towel, and do not press upon the ball in so doing, as it flattens it much sooner than Nature intends, and thus calls for glasses earlier. Where there is a great deal of inflammation—and this is evident from the bloodshot appearance—advice should be sought immediately.

Let it be the invariable rule to sit with the back or side to the light when reading or at work. It is easy enough to form this habit, and it saves the eyes from fatigue. It is well to interrupt the strain upon the eyes when occupied with close work by letting them rest upon something else at a distance occasionally.

The habit of lying down and reading is a bad one. It strains the muscles of the eye, because it is next to impossible to hold the book or paper in a good position, and the blood also has a tendency to run in excess thither. Do not try to read books with very fine print. There never was one written which was worth the strain upon the eyes necessary for its perusal. In fact everything that is valuable can be found in these days in type large enough to be easily read. Simply throw the book aside and wait until you can get it in proper print.

A trouble which is very common is that of near sight, and in a large majority of cases it might have

been prevented if taken in time. Very many children inherit a tendency to this trouble. Others still acquire the habit of holding their books too close to their faces for various reasons. It perhaps originated from indolence, a poor light, or even from natural near-sight, and then continued because not noticed and corrected. In any case there is a chance for cure if taken in season. The tissues in childhood are soft and yielding, and may be trained into health and a natural condition. Care should be taken about children's position when at work. The light should be well regulated, their general health looked after, and every effort made to correct the habit of holding book or work near the face. Any child who cannot read with the book as far as fifteen inches away should have his eyes examined by a good oculist. This is an important matter which may affect his whole after life.


I have not attempted to give you any remedies for diseases, for that is what only a physician should do. Again, I say, allow no one to doctor your eyes who has not made them a study. Use nothing stronger than water in them, unless under the advice of a physician, but if they are weak take care of your general health and do not abuse them by overwork or carelessness.

CHAPTER XXXIV.

CARE OF THE FEET.

It would be interesting to know how many persons of those whom one meets in walking the streets of a city, are moving with perfect ease, corn-less, bunion-less, with joints and cords in perfect order, whose shoes do not pinch or hurt in any way, in short, who are not conscious that they have feet even while depending upon them for locomotion. I venture to say the number would not exceed one in a hundred, and perhaps it would not even reach that. Instead of being simply a means of pleasure, their pedal extremities are sources of pain.

The reason is obvious. From the time a child begins to walk his feet are cramped in shoes too small for him, or which fit vilely. The most careful mother rarely perceives the necessity of precaution in this direction, of seeing that they are broad enough for the foot to spread out naturally and easily, and yet not so large and clumsy as to rub back and forth every step that is taken. The complaint of a hurting shoe is not considered an important one, and children are often philosophers enough to accept what they think is inevitable, and forget pain in the pleasure of play. Nevertheless, trouble is beginning



and no slight one, either, as all who have suffered tortures from corns and bunions will readily confess. The pain from one of these is more intense often than that attending a severe attack of illness, and is sufficient to put to flight the patience of the most enduring of mortals. And it might all be prevented.

It is of the utmost importance that both shoes and stockings be made to fit smoothly and easily. The stockings should not be so large as to have folds and wrinkles in them to press upon the tender skin. Usually those of little ones are knit or bought a little too large, for fear they will outgrow them. This is cruel. Have fewer in number so that they will wear out sooner. Have the shoes made of soft leather or kid, and broad enough to let the foot rest in a natural position, just as it does when uncovered. Then the toes will not be squeezed up against each other, so that they sometimes overlap, and corns, etc., will not be known. Nor should children be compelled, while their feet are growing, to wear coarse, heavy, awkward shoes. They will give them a stumbling ungraceful walk, from which it will be hard to recover. Better let them go barefoot during all the Summer months, if economy demands one or the other.

“All that is very well,” says some one, “but what about those of us who are children no longer, and are hobbling about in anguish from corns and bunions already here?”

I give you exactly the same advice with regard

to your shoes and stockings. How many of you wear shoes that are perfectly comfortable from the first? Now, honor bright! Don't let pride come into the answer at all. How many can put your feet squarely down upon the ground in your shoes and feel no tightness or constraint? How many can walk a mile in new shoes without limping? It is a nice thing to have pretty feet, but if Nature hasn't given them to you, you won't help the matter by making corns and bunions, and ruining your gait. If she has, it is a shame to try to improve upon her handiwork, and you simply cannot do it. The result will only be destruction and misery.

I have said nothing about high heels, but common sense can dispose of them quickly. They throw the body out of its natural position, strain the back, push the feet forward upon the toes and are an unmitigated evil. Many of the diseases that make women chronic invalids are due largely to this wearing of a shoe that is utterly unfit for its purpose in every way. Put your feet down upon the floor, and then look at your shoes, and see how near they conform in shape. A low, broad heel is the only thing fit to wear, and any woman out of her teens who will permit herself to put on the high French heels is simply idiotic. Younger than that, such folly may be excused in her. Girls of that age, feeling that youth and elasticity will last always, do many things they would not later.

Now to the corn question. They are formed by

long continued abnormal pressure, and are merely layers of dry skin with a central point of hardening. Pressed upon, this point is forced down upon the nerves of the true skin and produces exquisite torture. A thousand and one remedies are offered, many of them very good, but none effecting a permanent cure. Frankly, I do not believe there is anything that can be relied upon to do this after the corn has been a companion of several years' standing. But they can be treated in such a way as to bring great relief, and one of the best modes is as follows: Pare the corn carefully with a sharp knife, taking care not to cut in so as to draw the blood. Then rub it over with a stick of nitrate of silver or with nitric acid. This will take off more of the hard skin in a few days. Get some adhesive plaster and cut in narrow strips, not more than the sixteenth of an inch wide. Build a collar up cob-house fashion around the corn until it is high enough to keep all pressure away. Then wear the kind of shoes I have recommended, and the monster will cease troubling you, for a time at least. If it returns again, the operation must be repeated. A soft corn can also be treated with nitrate of silver or nitric acid after the thickened skin is removed, although the first application is much more painful. After it is put on place a piece of soft cotton or linen between the toes, so that the air will reach the corn. In a few days a layer of skin can be taken off. A second application is generally all that is needed. Be careful not to make that too soon after the first.

Bunions are inflammations of the great toe joint, and exceedingly painful. When they are very bad they need careful treatment by a physician. Sometimes, however, relief can be obtained by bathing them in something to allay the fever, such as arnica or Pond's Extract, keeping off all pressure meanwhile, and then surrounding them with a ring of adhesive plaster, as I advised in the case of the corns. They will not get well so long as there is any direct pressure upon them.

Another evil is ingrowing nails, caused by wearing narrow-soled shoes, shoes too short for the foot, and high heels. The full weight of the body is thrown upon the toes, and as a consequence the nail cuts its way into the flesh, enlargens and thickens, while often granulations spring up at the side. Take a narrow, thin blade, without any sharp edge, and putting over the end a little cotton, work it down between the granulations and the nail, and force it under the edge. Then step upon the ball of the toe, and if there is no pain leave the cotton there. Take a fine camel's hair brush, and put a dressing of nitric acid upon the granulations. By and by there will be a layer of dead skin ready to fall off, when it must be removed and the cotton changed. Repeat this until the nail has time to grow out in a normal manner. The nails should be always cut squarely across the top.

Frosted feet sometimes cause a great deal of trouble. A most excellent thing for this is to bathe them in a mixture of equal parts of muriatic acid

and water. Another remedy pronounced good is a bath of tincture of lobelia upon the affected parts.

One thing more with respect to these extremities, and a very important one it is, remains to be said. There is no part of the body so liable to emit an offensive odor as the feet. Their covering is close and their perspiration often excessive. They should be washed off every day and rubbed thoroughly until perfectly dry. A little ammonia in the water is a most excellent thing. Then the stockings should be changed often. A good way is to turn them wrong side out at night and expose them to the air. Too great care cannot be taken in this matter. People's feet sometimes become diseased, and an absolute stench proceeds from them. This might many times be entirely prevented if proper precautions were observed. In such cases they should frequently be bathed off with alcohol, put often in hot water, and rubbed vigorously, while, if necessary, the stockings should be changed twice a day. To destroy the odor in them, let them soak after taking off for some hours in a solution of boracic acid. Washing the tender parts of the feet themselves in the solution relieves the pain and heat. This is recommended by an English physician of high standing. An ounce of prevention is worth a pound of cure always, and a proper care of the feet will be very likely to prevent their ever becoming offensive. They should, indeed, be always as sweet and clean as any other part of the body.

CHAPTER XXXV.

THE HANDS.

That beautiful hands constitute a strong attraction many women are conscious, and consequently covet those that are shapely and white, while they study the art of keeping them so. Others, again, are careless, imagining it a matter of minor importance if their faces are smooth and fair and comely. But they make a mistake, for many a plain-featured woman has held the destiny of men in her pretty, graceful hands that spoke, perhaps untruly, of refinement and all the virtues of true womanhood.

Hands are not all equally symmetrical, to start with, and hard labor frequently distorts them, and banishes what of beauty there was in life's spring time. Much can be done, however, by a little care, to preserve their comeliness, and it is not beneath the dignity of any woman to take these precautions, nor is it a foolish waste of time or money.

One of the most important things to keep the skin of the hands from getting rough and coarse is to use good soap, and by good soap I mean that which is made of the best material, and not refuse matter. No matter how nice it may *look*, if it is not

pure, it will injure the skin. White castile is as good as any. It is not best to wash the hands too often, for that will make them red and coarse. I know a lady who had an exquisitely fair, smooth complexion—as fine as satin—but her hands looked, most of the time, as if parboiled. The reason was that she could not go near a washbowl without laving her hands, and as the water was usually cold, the result was the destruction of their beauty.

Do not at once jump at the conclusion that because you are obliged to wash dishes there is no use of trying to have good-looking hands. Some of the prettiest I ever saw were upon a lady who had done her own work for years, and no slight task it was. But she never put them into soft soap, nor used it upon them in any way; she always dried her hands carefully after taking them out of the water, and if through with the dirty part of her work rubbed over them a preparation, the recipe for which I shall give you by and by, and she was careful not to suddenly change from cold to hot water, or from hot to cold, nor to expose them to the cold air without covering. When handling coal or ashes, building fires, or doing rough work of any kind, she was careful to have an old pair of gloves, with the tips of the fingers cut off, to draw on easily, and this had become so much a matter of habit that it was done without thought. The consequence was her hands were the admiration of all who saw them, and there were frequent expressions of astonishment

that she could preserve their beauty and do so much hard work. The great secret lay in the painstaking.

The preparation I spoke of is made as follows: Cubebs, 1 drachm; glycerine, $1\frac{1}{2}$ ozs; spirits of camphor, $\frac{1}{2}$ oz; ex. heliotrope, 1 drachm.

If the hands ever become rough—and sometimes they will, in spite of every thing you may try to do—rub them over with this when you go to bed, and put on a loose pair of old kid gloves. I say loose, because if they cut or are in any way uncomfortable they will prevent your sleeping, which will prove an evil worse than that you are trying to cure.

There are other things which serve the same purpose as the preparation I have given, exceedingly well. Pure glycerine is good for some, while others cannot use it at all. A little time will serve to show its good or ill effects. An excellent thing for both hands and face is a mixture made of 1 fluid ounce of tincture of gum benzoin, $\frac{1}{2}$ ounce of glycerine, and 7 ounces of rose-water. Bathe the face, neck and hands with it, and let it dry on, then wash it off in the morning with a very little pure white castile soap and warm soft water.

It is very important that the hands be always washed in soft water. If you can not obtain that, put a little powdered borax or a few drops of ammonia into what you use for washing and it will improve it vastly. A small quantity of soda will answer the same purpose. Oatmeal thrown into the water is a good thing to whiten or soften the hands. These little

things are all so easy to do if you once acquire the habit. Excessive redness of the hands is often produced by wearing the clothing too tight. Of course the first thing is to remove the cause whatever it may be. Often it can be diminished by putting the feet in hot water for two or three minutes at a time quite frequently.

Some of my readers would probably take the trouble to wear cosmetic gloves if they knew how to prepare them. Various recipes are given for this purpose, but one of the best is the following, from "Old Dr. Carlin Recipes": Beat the yolks of two eggs with 2 teaspoonfuls of oil of sweet almonds, and to this add $\frac{1}{2}$ ounce of rose-water and 2 drs. of tincture of benzoin. Turn the gloves wrong side out and brush them over with the mixture. Wear the gloves at night. A pair prepared thus can be worn two weeks. I have never tried this, but those who have, pronounce it good. The great trouble about such things is the disinclination to persevere until the good effects are seen. Of course, time is a necessary element to work a change from what has taken time to produce.

So far, I have said nothing about the nails, but they are a very important adjunct to the beauty of the hands. To say that they should *always* be kept clean is needless, for any one with a proper regard for personal neatness, will be sure to do this, and yet it is true that I have seen delicate, refined looking ladies and intelligent gentlemen sit down to the

table with a black rim encircling the ends of the fingers. A shapely hand loses its attraction with such an accompaniment.

The nails should be pared frequently and evenly. They should be rounded almost to a point, and each one uniform with the rest. Be careful not to break them, for they have then a jagged, ugly look. With your little ivory cleaner, or the back of your pen-knife, shove the skin down from the lower part of the nail. Many ladies are careful to polish their nails, considering their bright appearance a great beauty. This can be done with a little piece of chamois skin and a nail powder, which can be bought at any druggist's.

CHAPTER XXXVI

THE HAIR.

The hair is often called the woman's crown of glory, and it has very much to do with her appearance. The soft framework which Nature has made for her face requires, however, not only good taste in the arrangement, but great care in order to preserve its beauty—a care which very many do not think of giving until the thinning locks and changing color remind them that there is a possibility of this necessary addition to their charms passing away from them when it will be the most missed. To lose the hair is at any time, however, a great misfortune. I shall never forget the terrible shock it was to me once when I saw a young lady whom I had admired for her fair, sweet face set around by clustering brown hair, after a severe sickness which had left her entirely shorn of her beautiful locks and with an absolutely bare head. It was an accident that brought her before me without her coquettish cap and wig. The transformation was so great, her beauty so entirely gone, that met in a strange place, I should not have known her. I had never before imagined that this loss could be such a misfortune. And this is why

I so earnestly advise you to do all that you can to keep your locks luxuriant and healthy.

Of course the hair is often affected by a diseased body. It becomes dry and harsh, falls out in quantities, loses its gloss, and perhaps begins to turn gray because of deranged organs, excessive heat and lack of nutrition. The remedy then lies in a restoration of health. But when conditions are normal, the treatment is very simple. Have a good brush and every night before retiring use it thoroughly. I do not mean a half dozen passes over the head, but a good ten minutes brushing until the scalp glows with the friction. Repeat the operation in the morning if you have time, but be sure that once a day at least this is done. Be careful in combing out the hair, not to tangle or break the ends. I have seen people jerk the comb or brush against a refractory knot until they managed to break it away from the rest. The consequence is a mass of uneven locks that always give a rough appearance, no matter how carefully the coiffure may be arranged.

Once a week wash the head in warm water. Dampen the hair first, then rub powdered borax over it and apply the water until there is a complete lather. Rinse it off in clear, warm water. You may be compelled to change it two or three times. The last time throw a little salt into the bowl. This is said to keep the hair from turning gray. Wring it as dry as possible; take a towel and rub all the water out that the cloth will take; comb it out carefully

and brush it until dry upon the head. If this is too tiresome a task wrap a towel around the head, to prevent evaporation and cooling, which would be likely to give you a chill, then sit down and wait patiently until it is in a proper condition to arrange.

The great trouble about this is the danger of taking cold, but proper care will always prevent this. The washing must not be done in a hurry ; sufficient time must be given for the hair to dry before doing it up ; you must not get in a draft with the hair wet and the head uncovered. A good thing is to rub Jamaica rum over the scalp just before brushing. That stimulates it and prevents a chill. Many people use the white of an egg in washing the hair. That is very good, perhaps just as beneficial as the borax, although I much prefer the latter.

The frequent head bath is all that is necessary to keep the hair in good order unless there is some disease of the scalp. If there seems to be a lack of the natural oil, a very little of the softest and finest oil that can be found may be used, but carefully avoid this sopping the head with perfumed stuff that only sticks it up, catches the dust and is generally uncleanly. Do not use soap of any kind upon the head. It simply impoverishes the hair, widens the parting and sometimes causes baldness.

Now as to the patent medicines to promote the growth of the hair. Rest assured that very many of them are humbugs, some of them are harmless, and some absolutely hurtful. Where they seem to

do most good is when the directions for their use include with the application a thorough rubbing and brushing of the scalp. You would have probably perceived the same good effects without the nostrum from the friction of the scalp systematically applied. Or if a stimulant was required to still further quicken the action of the skin, a simple thing, as brandy in which blood root (*Sanguinaria Canadensis*) has been soaking, that you can procure for yourself at much less cost, will be just as effective.

Do *not* use any hair dyes. If your hair is growing gray accept it as one of the inevitables that poor health or remorseless Time brings, and let it be. Almost all of the advertised articles to change the color of the hair contain some mineral poison which will, sooner or later, affect the health. Paralysis has been known to follow their use, and if not that, other evils. Do not allow vanity to tempt you into experimenting with anything for any purpose of whose composition you know nothing. There are worse things than gray hair.

Many people are very much troubled with dandruff. This, of course, denotes a diseased condition of the scalp, but it may often be cured by the baths which I have recommended. The trouble seems to be in an excess of heat which causes the scarf skin to dry and scale off. A simple remedy warmly recommended is to put an ounce of sulphur in a quart of water, letting it stand for several hours, occasionally stirring the water. Then pour off the clear liquid and wash the head with it every morning.


Persons who desire to crimp the hair or are troubled with short locks falling on the neck, will find the following bandoline excellent, and easily made. Put an ounce of quince seed in three pints of water, boil it down one-half, strain it into wide-mouthed bottles and add a few drops of essence to keep it sweet and fresh. Or dissolve a few pieces of gum tragacanth in water, then make it as thin as you like with rose-water, pour it into a bottle and it is ready to use.

The same thing is true of these directions for the care of the hair as of those for every part of the body—they must be persevered in. The object is to keep it in health. Neglect it, and like all other things worth having, it will lose what makes it attractive, or will leave you altogether.

CHAPTER XXXVII.

THE TEETH

I come now to the teeth, upon which so much of not only the comfort but the pleasures of life depend, which add to or detract in so large a measure from the beauty of a face. Many of my readers have passed hours of agony with a decaying tooth, and suffered tortures in having it filled or extracted. They have wondered why these necessary instruments could not have been made in a way to last as long as the life of their possessor endured. Truth to tell so they were. The trouble lies in the disobedience to Nature's laws which has caused derangements of the system that have extended to the teeth. Yes, I know you are tired of hearing about Nature's laws, but they are so constantly ignored by the majority of people that it is necessary to talk of them in season and out of season. If you keep your stomach constantly sour with decomposing, half-digested food your teeth will inevitably begin to decay and there is no help for it. When you find black spots upon them—the beginning of the end—go to work and by dieting and common-sense care get the digestive organs in good order, and you will have some chance of preserving your teeth.



A large proportion of the substance of these organs for mastication is phosphate of lime, which gives them hardness, durability and firmness. When they exhibit a tendency to crumble, it is because of a lack of this substance, which should be supplied by a diet into which it enters largely. In case of children, and grown persons too, who are fond of milk, a teaspoonful of lime water to a tumblerful, will give the necessary lime, and prevent the milk from souring upon the stomach. Parents should watch children's first teeth very closely to see that any lack in this direction is supplied before the second come. Right here I will tell you how to prepare the lime water used for this purpose and for sweetening the breath.

Put one ounce of lime into two pints of river or rain water,—it makes no difference which, only that it is clear and soft. Let it stand until the lime is dissolved, then bottle it up and keep it well stoppered, as exposure to the air causes carbonic acid gas to be absorbed, and an insoluble carbonate of lime is formed, which, of course, renders the water of no further use. If you have no closely stoppered bottles, put in more lime, so that there will be some remaining undissolved after the ounce is saturated and that will prevent the absorption of the gas.

As to the quantity necessary to sweeten the breath, as a general rule, take a half of an ordinary wineglassful or two tablespoonfuls three times a day after meals.

The teeth contain three different materials. The first called dentine, composes the body of the tooth, and is made up of about 72 per cent. of bony matter and 28 per cent. of organic substance. In the center is what is called the pulp cavity containing the pulp, a soft substance that has blood vessels and nerves, and is the only part of the tooth that is so supplied. This is the source of the ache that drives humanity almost insane at times. Outside of the dentine in the fang of the tooth is the second part called *crusta petrosa*, which is a thin layer of bony tissue serving to hold it more firmly in its socket. The third part is the enamel which covers the crown of the tooth, and it is of the care to be taken of this of which I want to speak now.

It is the hardest of the tissues, containing 95 per cent. of bony material, but for all that it is possible to crack it, and then the mischief is done, for the dentine exposed to the air will soon decay. Certain substances will also turn the enamel black, and when this takes place there is no repair. To prevent the first trouble, avoid exposing them to the extremes of heat and cold. Very hot tea, or very cold water are both injurious. Do not crack nuts or bite anything very hard, as that sometimes cracks the enamel as well as the article. To avoid the second take no strong medicines whose properties you do not understand thoroughly. I need not tell women not to use tobacco, which sometimes discolors the teeth.

It hardly seems necessary to say that they should

be thoroughly cleaned once a day and washed off after each meal, and yet the conditions that I have seen prevailing in the mouths of women who called themselves neat and well-bred tell me that all do not appreciate this necessity. Persons who wash their hands several times a day do not seem to think it needful to bestow a similar attention upon the teeth.

The best dentifrice is pure soft water. A little willow charcoal, finely pulverized, occasionally used, makes the teeth white and sweet. Mix a third part of powdered orris root with it, and this renders the breath fragrant unless there be a counteracting sour smell from the stomach. There are things good for the teeth, but use none that you know nothing of; your dentist is the best one to consult in the matter. When the gums bleed and seem soft and flabby get equal parts of powdered myrrh and Peruvian bark, mix thoroughly and use as a tooth powder when you brush your teeth. If the bitter taste of the bark is too unpleasant, put in a little orris root, or use the myrrh alone, although the mixture is much better.

Never permit decayed teeth to remain in the mouth. The moment you discover a cavity have it filled if possible; if not, let the teeth be extracted immediately. A rotting piece of bone does not impart a pleasant odor to the breath nor does it conduce to the health.

To be sure that your teeth are in good order it is

well to go to your dentist as often as once in six months—once in three is better—and have them carefully examined, the tartar cleaned off that is sure to gather just below the gums and in the crevices between them, and the cavities, if there are any, filled. Should you live too far from a dentist's to make this possible you must do as well as you can by daily brushing, and keep the tartar off by getting some powdered pumice, and with the flat end of a small pine stick dipped in it when wet, rub the teeth carefully next to the gums. But on no account let them go so long when decayed, as to run the risk of losing them entirely. Nothing, not the finest set that ever was made, can take the place of the natural ones, even though the latter be irregular and homely.

One word right here, in closing, to parents: In nine cases out of ten it is your fault if your children grow up with crowded, irregular teeth. Watch them closely, and as fast as the first teeth loosen have them pulled out. If any of the second set come in crookedly, have a good dentist straighten them while the jaw is yielding. An even, handsome set of teeth is greatly to be desired, and could be had much oftener than they are, if parents were only watchful, and took the necessary measures.

CHAPTER XXXVIII.

CARE OF THE SKIN.

Two women were talking together, the one fair and stately, with a skin like satin making an exquisite setting for the brilliant brown eyes that changed with every varying emotion—a woman fresh and sweet as a dew-wet daisy, even though she had parted forever with the charm of youthful days. The other was not more than twenty, with regular features, good eyes, a graceful figure, but a complexion which was already coarsening and giving her an old look long before her time.

“I do not see,” said the latter, earnestly, “how you keep your skin so smooth and fine and beautiful. Here am I, but little more than half as old as you, and I verily believe you would be taken by a stranger to be the younger, all because your complexion is so bright and rosy, while mine is coarse, muddy and rough. Tell me your secret.”

“Let me ask you a few questions,” the other said; “what do you bathe your face with, and how often do you do it?”

“With castile soap—the pure white—and soft water, three or four times a day, or as often as I think it needs it,” was the triumphant reply. “Surely there is no fault to be found with that.”

Her companion smiled.

"And how do you dry it?" she questioned farther.

"With a crash towel," was the answer; "I use that kind because they are rougher, and it is easier to bring the blood to the surface. Nor is there any half-way work about the rubbing I give.

"How do you protect your face when you are out in the cold?"

"I don't protect it at all. The true way, I think, is to toughen the skin by exposure.

"What cosmetics do you use?"

"Not a thing. Not a powder or paint—not a tint, but what Nature has placed there. So you perceive there is no reason why my skin is not soft and fine instead of growing coarse every day. Now tell me what you do. I cannot bear to lose all my good looks while I am so young."

The other looked at her in silence for a moment or two before she replied. Then she said, slowly and earnestly :

"Will you be angry when I tell you that there is not one thing which you do in regard to your skin that I do not object to ; that if you go on in this way, by the time you are thirty you will look fifty, and that there is no more use in your thus spoiling your good looks, than there is of your committing suicide ? You are reasonably healthy, have no eruption to disturb and mortify you, and with better and more sensible treatment your complexion should be for long years to come fine and fair, a joy for you

friends to look upon. I know an old lady of eighty who has at this moment a clear, soft skin, free from blemish and with scarcely a wrinkle in it. She looks at least twenty years younger than she is. Part of this is due to her general good health, and part to the lack of abuse of her naturally fine complexion."

The younger woman was gazing with a surprised but eager face at her companion. "Go on," she said; "if I **am** doing all wrong, tell me what is right."

"In the first place, it is not necessary to go at your face as if it were a piece of dirty linen, to be mauled and rubbed without mercy. Use a soft cloth or a fine, soft brush. A sponge is excellent, providing it is of the finest possible texture, but otherwise a cloth is much better. Then with clear rain-water, into which you have put two or three drops of ammonia, rub briskly but *gently* over the whole face. The ammonia seems to have a penetrating power that will take off the dirt quicker than soap and is not open to the objections of the latter, which often seems to cut and coarsen the skin. But if you use soap at all, be sure that it is always the purest white castile or something equally as fine and cleansing. "Before you go to bed wash off your face with milk diluted with hot water. It is well, I think, to have the whole wash as hot as can be used whenever it is convenient. Dry the skin *always* with a soft towel, instead of the coarse one that you mentioned.

"If you want to keep your skin soft and fine,

don't, I beg of you, wash it immediately before or after going into the open air, nor when you are heated and in a perspiration. Take my experience and your own for it; the result will be to coarsen and give you a sort of drawn and old look. Then don't try to toughen your skin by exposure to the wind. When the air is calm and still, neither extremely cold nor hot, it will do to go without a veil, but at other times your face needs protection.

"Now, about cosmetics. I know you think I will agree with you there. Well, I do to a certain extent. A young girl like you should not need to make a practice of using them, and yet if care is taken in the choice, not to employ those which contain things which are poisonous, I think no harm will be done by applying them occasionally. But one precaution must be taken. *Always* wash off the face carefully before retiring, or before repeating the application. The trouble often comes from putting powder upon powder. Never do that."

"But how are we to know what kind of cosmetics are harmless?"

"Anything that contains sugar of lead is injurious, and you can detect its presence by dropping a little ammonia into it before using. If the lead is there the powder or liquid will turn black. So far as powder is concerned, you may know it is absolutely harmless by making it yourself. While roses and violets are in bloom, take the fresh blossoms and bury them in finely pulverized starch. Remove

the withered flowers in twenty-four hours and substitute more, and continue to do this for a week, by which time the starch will have become full of fragrance. In the summer it is almost impossible to do without something of this kind. It cools the skin and takes off the shiny look that so detracts from the beauty of the complexion."

"But how do you keep off wrinkles?"

"Lines will come with years, if you think and feel. But I shall have to tell you what my dear old grandmother told me, and I never forgot it. I was fretting over some trifle, and she looked at me through her glasses in her odd way. 'Child,' she said, 'don't get into a pucker about nothing; it helps to make a wrinkle.' And it is true. More women make lines in their faces by useless fret and worry than seems possible. But there are some things which help to keep the smoothness of the skin. The bath in hot milk at bedtime is one. And I have known persons to use a wash made of 1 fluid ounce of gum benzoin, put into 7 ounces of distilled rose-water and $\frac{1}{2}$ ounce of glycerine added, with excellent effect. They bathe the face, neck and hands with it on going to bed, and let it dry on, then wash it off in the morning with a little soft water and pure white castile soap. Be sure never to use hard water on your face. If there is no other way, soften it with a little powdered borax or a few drops of ammonia.

"Now I have told you all my secrets about pre-

serving a good complexion as long as you live. Of course, if one has poor health, impaired digestion and circulation disordered, there cannot be a fair, pure skin. But you have none of these. Youth and health are yours, and so if you choose to follow the few simple rules I have given, you can be possessed of the beauty a pretty complexion gives."

The directions given in the above conversation, are those which each and every one of you should follow out. Especially is this true of young people while they still possess the freshness and fine textured skin that belongs to youth. Too often women do not realize the necessity of such care until lack of it and careless exposure have done their work. But it is never too late to mend, and while, once gone, it is impossible to bring back all of its beauty, many of the defects of the skin may be remedied by following the simple rules given, not for one week or two, but persistently so long as you live.

"If you will only tell me how to prevent my face breaking out with these ugly pimples," said a young girl, "I will not care if I am black and coarse-looking."

I did not wonder that she felt in this way, for her good looks were completely destroyed by these red, angry spots, with the white heads, scattered all over what would otherwise have been a comely face. Of course they told a story of indigestion, or possibly, of some inherited humor in the blood, for there is nothing surer than that the physical sins of the

parents are in some way visited upon the children. If simply due to the former, I have already given directions how to overcome the difficulty. If to the latter, while good digestion will do much towards a cure of the evil, it will not eradicate it entirely. Where the trouble is clearly defined salt rheum—and that is one of the most common ways in which a taint in the blood shows itself, appearing, however, oftener upon the hands than upon the face—the following may be relied upon to effect a certain cure:—

Take of *fresh lard* enough when melted to make half a teacupful. To this add a small handful of the green (inner) bark of the common elder—the kind which produces the berries—and simmer the same until the lard becomes of a green color. Then, with a fork, remove the bark, and allow the lard to cool, when it will be ready for use. Apply at night, covering the hands, if used upon them, with a pair of kid gloves. In the morning wash with *soft* water and pure castile soap—the *white* is the best. A small quantity of Epsom salts, dissolved in milk, may be taken the morning of the second day's application of the ointment.

Often, however, pimples which denote simply a slight and temporary disturbance of the system make their appearance and are an exceeding annoyance. They may usually be made to disappear by rubbing a little camphor over them when they first show themselves, and repeating the operation until they are gone. I should recommend, too, a little

abstinence from food for a time, especially that of an oily character.

Many people are troubled with what are called comedones—little black specks in the face, which are particularly disagreeable in appearance and seem hard to get rid of. The simplest treatment for these is the best. Wash the face off when going to bed with a little warm or tepid water, in which a few drops of ammonia have been put, and then apply a gentle friction by rubbing with a soft towel. Do not rub hard, as people often do, with force enough to almost tear the skin away. That is not what is needed. After the skin is thoroughly dry, rub on a lotion made of 2 ounces of finest brandy, 1 ounce of cologne, $\frac{1}{2}$ ounce of liquor potassa, and then dry it off by the same gentle friction as before. Do this also in the morning, and if you have time in the afternoon, when dressing for the evening. I have known several cases to be entirely cured of this trouble by this simple process, even without the lotion. Another thing said to be good is to use a lotion made of common sulphate of zinc, sold as eye water.

Nothing is better to cure sunburn than sweet cream. Bathe the face with it several times and the color will soon die out and the soreness disappear. To prevent sunburning, powder the skin quite frequently when exposed. Fine starch will do as well for this purpose as anything else. The effect of the sunburn is a great deal worse if the face be

treated to a bath in cold water immediately after going in-doors. Let the blood have time to cool and recede from the surface before applying cold to the latter. A method recommended for removing tan and freckles is to bathe the face in a wash made of glycerine, diluted with lemon juice. While using this, however, it is necessary to be careful about exposure to the sun as the skin is made more sensitive. Freckles may be made to disappear sometimes by bathing them in a solution of acetic acid and water. Put just enough acid in the water to make it smart when the tongue is touched to it. Another very simple thing for taking off tan is a bath of the face every morning in a decoction made of elder flowers, over which boiling water has been poured, then left 24 hours and strained carefully. Both the lemon juice and elder-flower tea are declared to be excellent for freckles, but any one disposed to be troubled with these skin blotches must rely principally upon the protection they give their faces from the sun and wind.

One more word of caution about cosmetics. Be especially careful what you use. Should you not care to make your own powder as I suggested, subject whatever you buy to two tests. Squeeze lemon juice upon a little ; if it foams throw it away. Drop ammonia upon it ; should it turn black, toss it into the fire. In either case, it might do you no harm, and it *might* bring on a most serious skin disease, or other troubles that would prove dangerous.

CHAPTER XXXIX.

TO MAKE A GOOD NURSE.

In the first place, it is an absolute necessity that one who is to successfully care for sick persons shall be in reasonably good health, the more vigorous the better. This for two reasons. A feeble, shattered constitution is far more liable to contract any contagious disease than a strong one, and, in fact, is almost certain to do so. Then, again, anybody with little vitality has none to impart to the sick one, and is liable to break down at the most critical moment for the patient. There must be hours of anxious watching, times when exhausting rubbing must be done, days and nights in which sleep, except by snatches, is impossible for the nurse, and it needs health and vigor to answer these demands.

Nor should any one who is nervous and frightened about the sick one, and unable to maintain self-control, have the care in critical cases, as the nervousness will be sure to be communicated to the patient to his great injury. A quiet, calm, equable demeanor is of the utmost importance. So long as a person thinks he is going to get well his chances are good, but let the mind once be made up to death, and medicines are of little avail. Be always cheerful in the sick room. Act as if you thought recov-

ery was a certainty, and you will do more to secure it than you can realize now. Above all things, do not whisper in or near a sick room. Disease often makes the hearing preternaturally acute, and the patient will imagine that his case is under discussion, and will strain every faculty to catch what is said. This effort is sure to make him worse.

Never wear squeaking shoes around the sick room. It is a nerve-irritating sound at any time, but when the body is exhausted with fever and pain, it is almost beyond endurance, and the patient is sure, unless in a stupor, to become restless and uncomfortable. A pair of crocheted slippers, with thin leather soles, will best answer the purpose, while outside of the door a thick pair can be kept that can easily be slipped on if the nurse is obliged to go out upon the ground. Slamming doors, opening and shutting bureau drawers in a noisy way, in fact, all kinds of sudden sounds should be avoided. Especially should this be so when the sick one is sleeping, for life often hangs upon the continuance of the slumber. If the room is heated by a stove replenish it during the waking hours, but if it becomes a necessity to do otherwise, lay the wood in noiselessly, or if coal is used, wrap each piece in paper and put in separately.

No sick room should be without a thermometer, and it should be consulted frequently. An even temperature is necessary. It should never fall below 68°, or be allowed to rise above 70°, unless for some special reason the doctor orders it. Remember that

a very slight change either way may bring on a chill or induce a fever which will prove fatal. Hang the thermometer where it will be out of drafts, and can therefore register temperature correctly.

Another thing is to properly ventilate the room without cooling it off too rapidly. The patient needs the vitality that is to be gained from pure air, and while carefully guarded from drafts there must be a frequent change of the atmosphere. If not close to the bed open the window at the bottom a crack, and lower it at the top a little. Leave it this way all of the time if possible. It is a good thing to have a screen that you can put between the sick person and the window or door, then occasionally open them wide and let in the fresh air. Of course, the nurse must be governed by good judgment as to time, etc. A very good screen can be made off-hand by spreading a sheet or quilt over the clothes-horse.

Keep the room as tidy as possible. Disorder wearies, especially if the sick person is one given to orderly habits. Put as many pretty things, and those pleasant to look at, in range of the eyes as you can, and vary their position often. A picture, a bouquet of flowers, will often soothe or give pleasure, even if they seem to be unnoticed. Looking at the same things hour after hour grows tiresome. People often act upon the idea that everything bright and attractive must be put away from the sick room. The contrary is true, especially when a patient is convalescing. I well remember the delight of a sick

woman who to'd me she had grown nearly frantic trying to count the figures in a peculiarly homely wall paper, when a beautiful pansy was placed in her hand. She held it awhile, had it laid near where she could see it, and in fifteen minutes was asleep, though seductive drops had been tried in vain.

There is a real art in keeping the bed in a proper condition for the sick. A wrinkle in the sheet will irritate an invalid into a fever, absurd as it may seem. A soiled pillow case and rumpled bedquilts will have the same effect. Crumbs in the bed are maddening to the pain-racked sick one, whose disturbed mental state is sure to react upon the body.

When it is possible make the bed over every day. Change the sheets and pillow-cases frequently, being sure, however, that the clean ones are thoroughly aired. Of course, the condition of the invalid may be such as not to allow of these things, but you can at least straighten out the clothes and shake up and turn over the pillows. Indeed, the latter should be often done. One side will soon get heated by the head, and the cool surface of the under one will be very refreshing. It is these little things, the deftness with which you make the changes, the gentleness and skill with which you lift the aching head or move the ailing body, that prove your fitness for taking care of the sick. It is an un-failing criterion of benefit from what you have done when the patient seems more comfortable afterwards.

Not long since I was speaking of something that was a good thing to do in giving a sick person a bath. "What," said the listener, "you would not think of bathing any one so ill as she is?" I replied emphatically in the affirmative, for the patient was burning up with fever, and to be cooled off in this way was just what was needed. But it was necessary to use the utmost caution in doing it. Only a portion of the body must be exposed at once. Take a soft cloth or sponge and wash off that part gently, then rub with a towel until the whole surface is thoroughly dry. A very excellent thing to do is to put a little salt in the water, or alcohol, or both. Some physicians prescribe a sponging off with alcohol alone, because it can be absorbed through the pores of the skin and the whole body be strengthened. It is an excellent tonic. Always be sure to rub the surface perfectly dry.

Of course, the frequency of the baths must depend largely upon the disease of the individual and his general condition. Usually an entire bath two or three times a week is sufficient, while the feet, hands, face and throat should be washed every day.

The underclothing ought to be changed at the time of the bath, but in doing this great care must be exercised lest the patient be over-fatigued. An old and experienced physician gives some general rules in regard to this matter, which are very valuable and can be reproduced in a few words:

1. Have everything that will be wanted ready

before beginning to make the change. 2. The fresh underclothing should be properly aired and warmed beforehand. 3. Be careful not to move the patient or uncover him more than is absolutely necessary. 4. Let no drafts of cold air strike him during the operation. 5. Let the patient do such things for himself as he can and ought, but be very sure not to allow him to exert himself too much in helping.

It will sometimes be found necessary to let patients rest before completing the work. In that case they should be covered carefully and left in perfect quiet until the change can be finished in safety.

I know some of my anxious readers are wishing that I would say something about the diet, for that is always a stumbling block in the way of amateur nurses, and indeed it is a most important thing. Too much food, or too little, are equally great evils. To know just what to give, and how to prepare it to render it acceptable, is a real art. The physician should, in a general way, direct the diet of his patient, but much must necessarily be left to the judgment of the nurse.

Often the desire of the sick person is a guide that it may be well to follow, especially when the appetite is very weak, for the system voices in this way a need for something it lacks, and if it is supplied begins to recover its vigor. Of course, it will not always do to follow out this rule. Especially must great care be taken when the patient is convalescing, for the starved body then often cries for more food

than it can dispose of, and overeating may bring back the disease, or produce fatal consequences. Give a little nourishment often is a good rule always, and the safest to follow. A nurse should always know how to cook simple, palatable things which will tempt the weak appetite. They should not be made rich with butter, sugar and spices, nor yet so plain that the indifferent stomach rejects them.

One absolute rule I want to lay down. Never carry food to a sick person on cracked, or seamed and broken dishes. If you have any pretty ware in the house use it in sickness. Let the napkins be perfectly spotless, the knives, forks and spoons shining brightly. These things have much to do with tempting the weak appetite, which would turn away in disgust from soiled and broken crockery.

Never allow the remnants of a meal to stand in the room. The sight of them is not pleasant, and they are apt to draw flies, whose presence and buzzing is very disagreeable. And right here I want to say that no slops or refuse matter of *any kind* must be allowed to remain about the patient a moment longer than is necessary. They poison the air and make him worse. If you cannot empty them at once, set them away out of the room, and attend to the matter at the earliest moment possible.

I want to particularly caution you about one thing. A custom which is very prevalent, especially in the country—and it is doubtless prompted by kind and friendly feelings—is to go in to see the sick, to

sit with them a while, or to visit with the nurse. This is all wrong. While the disease is in progress, no one except the family and those who have something to do there, should be allowed in the sick room. Never mind if somebody's feelings are a little hurt by your refusal to allow entrance. Remember that life or death may rest in your hands. I have known several cases where a relapse has been produced by too many callers. Talking or listening requires an exertion, and an expenditure of strength which cannot be spared.

Always speak gently to a sick person. Disease often produces phases of conduct that are far from natural to the well person. It will develop a fretful stubbornness that is utterly foreign to their nature, a querulous, fault-finding and dissatisfaction with what is done, no matter how tenderly and untiringly they have been cared for. In such cases remember that you are ministering to a mind diseased as well as to an ailing body, and be patient. It may sometimes be necessary to resist the invalid's wishes, but do it gently, though firmly. And never let the sick feel that you consider their care an intolerable burden. A sensitive nature would suffer under this conviction so severely as to absolutely prevent recovery. No matter how weary you may be, the sick one's suffering is far worse than yours, and you must govern your conduct accordingly. The mind has so much to do with the body, that a nurse can never afford to forget the importance of keeping her charge calm and quiet.

It is well in a severe case of illness for the nurse to keep a diary of the condition of the patient between the physician's visits. This may often give him a hint of the kind of treatment needed which he could get in no other way. A little excitement at his coming in will often set the heart to beating and the pulses throbbing in a way to prevent his making a correct diagnosis of the case that day, and your report may supply what he could obtain in no other way.

The order in which you keep this diary is not of any great importance, but it might be as follows:—

1. Record of time of giving medicine.
2. The state of pulse and temperature of body each hour.
3. Character of sleep, whether heavy like a stupor, quiet and natural, or light and easily interrupted. Also the amount.
4. Nature and amount of food taken.
5. Its effect, whether retained or vomited up, and whether it caused distress in any way.
6. Number of bowel evacuations and their nature.
7. Amount of urine voided and its general appearance.
8. Behavior of patient, whether delirious or stupid, and general conditions in regard to pain, fever, etc.

These are the most important points, and it is well not to trust to the memory in regard to them. The most experienced professional nurses, and the most successful ones, are exceedingly particular about keeping their diaries.

CHAPTER XL.

DON'T SPREAD DISEASE.

Carelessness in regard to this matter is widespread. In cities where an epidemic, once fairly started, sweeps along so rapidly, carrying off scores of people into the unknown future, attention has been so thoroughly turned in the direction of a check, and the subject so carefully studied, that if the knowledge acquired is used as it should be, a pestilence is never necessary.

There is yet, however, an infinite deal of carelessness or ignorance in individual families in regard to proper precautions in confining certain diseases within limits, and particularly is this true in country places. A child dies of diphtheria or scarlet fever, and the whole neighborhood will flock to the funeral, and there in the rooms where the germs of disease are still floating in the air, will sit for an hour or more, mothers and fathers who have little ones at home to whom they may carry their deaths. If any real good were to be accomplished by such risks, then it would be more excusable. It may seem hard that a family must be denied the presence of their neighbors in the season of their affliction. but the good of the many should be considered

before the feelings of the few. I think there should be a law absolutely prohibiting the gathering of any, except those whose services are imperatively necessary, in a house where there has been sickness and death from any of that class of diseases which can be conveyed in the clothing, or where infection is possible through the germs that are floating in the air.

Mothers have learned to regard the appearance of scarlet fever or diphtheria in the neighborhood of their homes with supreme apprehension; for without the greatest care, the strictest precautions, and sometimes even with them, these two diseases do not stop with a single victim in a household.

It is of the utmost importance, then, as all can see, that everybody should understand how to check the spread of these peculiarly fatal diseases, and the directions I shall give here are those recommended by the National Boards of Health of both the United States and Canada, and have, therefore, the authority of the best physicians.

In scarlet fever, the breeding places of the contagious particles, or poison germs, that are so easily conveyed from person to person, are the mouth, throat, passages of the nose and the skin. In diphtheria they come in the greatest quantities from the mouth, throat and the nasal passages, the skin not being at all involved, while in small-pox it is the only source of the production of these germs. Floating in the air, they may be inhaled by any one entering

the room, or, resting upon their clothing, may be carried away to be dislodged elsewhere, and breathed by any one who happens to be near. And it is astonishing, too, how long they will retain their virulence. Clothes worn by those who have been stricken with these diseases, or by persons in attendance upon them, and remaining packed away for years, have been known to communicate the infection when brought from their resting places. Articles that have been sent long distances over sea and land have carried the germs and planted the disease in new localities, and the wonder was great as to how it could have been conveyed thither. I remember hearing of the case of a child who was taken down with scarlet fever in its most malignant form. Not one had been known for years in the neighborhood, which was an unusually healthy one. At last the mother recalled the opening of a trunk in the garret a few days before her little one was taken sick. It was packed with articles of clothing belonging to a dead sister's only child who had died of scarlet fever, which had been sent to her years before for safekeeping. Among other things was a little velvet cap, that her boy had seized and gleefully placed upon his head, and so pleased was he that she had allowed him to wear it the greater part of the afternoon with no thought of evil consequences. The mystery was explained. The poison germs were undoubtedly in the cap, retaining all their virulence, and passed into the boy's system,

developing a fatal case of this terrible child destroyer. The same retention of activity and readiness of transmission are true of diftheria and small-pox poison, and like care is needed to prevent their spread. They may be sent in a letter, carried in a plaything, or in whatever they can obtain a lodgment. Just as soon as a child or young person is taken with a sore throat or fever, accompanied with a bad breath, he should be at once separated from the rest of the family and no one allowed to enter the room until it is ascertained whether he has a contagious disease, except the necessary attendants. As soon as the physician pronounces it a case of scarlet fever, etc., notice to that effect should be placed upon the house, so that everybody may understand the necessity of keeping away unless his services are needed. The patient must be kept isolated from the public, and from all persons except the one having the care of him, and the attendants should not be changed oftener than is positively necessary. They, too, should be restricted in their intercourse with other people. This isolation is imperative, and in many cities the health officers now enforce it, not only in case of small-pox, but also in scarlet fever and diftheria.

Too strong terms cannot be used in protest against the selfishness that will send children from a house in which there is contagious sickness to school, where so many are thus exposed to danger. It is worse than selfish, it is absolutely criminal, and when

disease is known to be disseminated in this way the willful act should be punished. No one has a moral right to jeopard the health and life of others, and he should not have a legal one.

When it is certain that a person has scarlet fever, diphtheria, small-pox or any contagious sickness, the bedroom should be at once divested of all needless drapery. Let no superfluous clothing remain in the room. Take down cloth hangings from the windows. If possible, remove the carpet. In fact, let *nothing* stay that can easily harbor the poison germs which is not necessary for the comfort of the patient, unless you are able and willing to destroy or thoroughly disinfect the articles as soon as regained health or death terminates the illness.

Right here let me say also that the nurse should always wear cotton or linen clothes instead of those made of wool. The reason for this is that the poison germs will not adhere so readily to the former, and they can also be much more easily disinfected.

The sick room should always have a most liberal supply of fresh air. Of course the patient must be shielded from a direct draft and this can be done in various ways. A most effective method and one recommended is to put a fine gauze or wire netting upon a frame slanting inward from the sill upwards to within a few inches of the ceiling. I have already suggested the screen device in the general care of the sick, but in hot weather the gauze or wire netting is preferable as it gives the patient more air.

As I said in the beginning, the contagious particles breed in the greatest quantities in the throat, nose and mouth in scarlet fever and diphtheria, therefore discharges from them should be received in vessels containing some one of the disinfectants which I shall give you hereafter, or else upon rags that can be immediately burned. In cases of typhoid fever and cholera where the poison germs are contained in the discharge from the kidneys and bowels, these should be passed into vessels into which has been poured at least a pint of disinfectant, and then buried at once, taking care, however, that the burial spot be 100 feet or more from the source of the drinking water supply.

It is very necessary for the person having charge of any one sick with these contagious diseases to keep herself as free from the infection as possible, and for this purpose a pail of disinfectant should be kept standing in the sick room. A very excellent solution for this purpose is that of the chloride of zinc, made by putting into one gallon of water 4 ounces of sulphate of zinc and 2 ounces of common salt. Another good one is one part of carbolic acid in about 30 parts of water. The nurse should wash her hands in one of these solutions whenever she has been doing anything about the patient, and if it is necessary for her to leave the premises during the sickness, hands, face and hair should be washed in it, the clothing changed throughout, and a free exposure to the open air secured before approaching any one.

All of the clothing, sheets, towels, etc., used about the patient should be dropped into this pail of disinfectant before being carried from the room, then thoroughly washed and boiled just as soon as possible.

All cellars, privies, water-closets, gutters, or cess-pools about the house or barn and stables should be frequently treated to a wash of copperas solution which is made by putting $1\frac{1}{2}$ pounds of copperas into 1 gallon of water. In order to save trouble it is well to keep it prepared in quantity in this way: Suspend 60 pounds of the copperas in a basket in a barrel of water, then it is constantly ready for use. This is a very good thing to do when there is no infectious disease on the premises.

Right here, for convenience of reference, I will give a list of the cheapest and best disinfectants:

1. Copperas solution. $1\frac{1}{2}$ pounds of copperas (sulphate of iron) to 1 gallon of water. The use of this is given above.

2. Carbolic acid solution. 1 part of carbolic acid in about 30 parts of water. This is good for washing hands and clothes in, for scrubbing floors and cleaning wood-work.

3. Zinc disinfectant. Put 4 ounces of sulphate of zinc and 2 ounces of common salt into 1 gallon of water. Use as described before.

4. Sulphur disinfectant. This is employed to fumigate a room after sickness is over. Use in the proportion of 2 pounds to a room 10 feet square.

5. Carbolate of lime. This is used dry for sprinkling in rooms, sheds, in the vaults of privies, etc. Lime water is also good for the latter purpose.

6. Thymol water. Into a $\frac{1}{2}$ gallon of water put 1 teaspoonful of spirits of thymol. The latter is made of 1 ounce of thymol in 3 ounces of alcohol, 85 per cent. Some who particularly dislike the smell of carbolic acid use thymol water in its place. Either solution may be made with an atomizer to permeate the air of a room, and thus kill the germs that may be floating about.

After the recovery or death of the patient comes the work of so thorough a disinfection of the room, furniture and clothing, that the health of others shall not be endangered.

The first thing is to purify the clothes and bedding. The best way is to subject them to a dry heat, in other words, to bake them for one hour. The trouble is, that in these days, few people have ovens of sufficient capacity, so that those articles which *can* be boiled have to be treated in that manner in place of baking. To every 10 gallons of boiling water, add from $\frac{1}{2}$ to $\frac{3}{4}$ of a gallon of commercial solution of lime-water. If the clothes have been lying for 24 hours in the zinc solution, they may then be washed with soap and water without first boiling.

The pillows, feather beds, mattresses, etc., must be spread out so as to have the whole surface as much exposed as possible, without being removed from the room. Then every crack and crevice of the

apartment should be closed, and a tub containing two or three inches of water placed in the center of the room. In this put some bricks, upon which set an iron vessel of live coals and throw on sulphur in the proportion mentioned before. Keep the room tightly closed for 24 hours, then repeat the operation. After this take up the carpet, beat and shake it thoroughly, and leave it out of doors several days. It is better, as said elsewhere, to take it up in the beginning of the illness, but if it has not been, it must be subject to this disinfecting process. So with every upholstered article in the room. Besides this fumigating of the outside of pillows and feather beds they should be opened and the inside be exposed to the fumes of burning sulphur.

After this thorough fumigation process, the wood work and floors should be scrubbed with the carbolic acid solution, the ceiling whitewashed or kalsomined, and the paper taken off the walls—if they are papered—and fresh put on, otherwise be served like the ceiling. Then leave the windows of the room open for several days, when it may be again occupied with comparative safety.

Whatever articles can be burned without too great loss, it is better that they should be, but they must be carefully disinfected by fumigation first, otherwise contagion may be carried away and distributed by the smoke.

I have spoken particularly of diftheria, scarlet fever and the small-pox, because the contagion from

them is more readily communicated through the atmosphere and remains virulent a great length of time. In cholera and typhoid fever the poison germs breed only in the discharges from the bowels, and these, as I have said before, should be passed into vessels containing a pint of disinfectant and immediately buried in a suitable place, where they can in no possible way contaminate the well or cisterns.

One more caution I want to give. After recovery from diphtheria do not permit a child to play with other children or to go to school or church until the throat and the sores on the lips and nose have been healed for some days. Be still more careful about allowing plenty of time to elapse in the case of scarlet fever or small-pox, because the skin continues for some time to throw off disease-bearing particles. Within the last few months a bright, beautiful, vigorous boy I knew well took the scarlet fever from playing with some children who had recently recovered, and in four days time the little form was still in death, leaving his agonized parents to mourn in utter desolation in their childless home. You cannot be *too* careful in this respect. Let the child play out in the fresh air, but in justice to others keep him apart from all little ones until every vestige of danger has passed.

CHAPTER XLI.

ACCIDENTS AND EMERGENCIES.

Everybody, whether man or woman, should know what to do in case some sudden accident occurs or emergency arises, when promptness of action is necessary and no physician at hand. The following simple hints are given for home use in such cases :

One of the most frequent troubles with children is bruises. There are two kinds: One is when the walls of some of the small veins or arteries are ruptured and the terminal branches of nerves lacerated. The blood pours out of the opening and causes the black looking area of surface which you so often see. Apply cold water immediately to check the flowing of the blood, and if the skin is not broken, a little arnica in the water, about 1 part arnica to 10 of water, is good. Pond's extract is also excellent diluted with water. The second kind of bruises—which is much more rare—is caused by the sudden compression of the blood vessels by the blow and is denoted by an extreme paleness of the skin upon the spot struck, and a paralysis or lack of feeling there. In this case apply hot cloths at first. Afterwards, in both cases, use stimulating, evaporating lotions. Alcohol with a little ammonia or camphor gum com-

bined is excellent ; a liniment containing chloroform is also good.

People, children especially, are very apt to get cut and sometimes badly. Unless there is much bleeding, all that is necessary is to examine the wound to see that no foreign substances are in it, wash it off with cold water, bring the edges together and put a bandage on to keep out the air. If it gapes open cut narrow strips of sticking plaster and stick to one side, then draw it together and fasten down upon the other. Do not cover the wound entirely with these. If it bleeds too freely and is in the upper or lower extremities, apply a tight bandage higher up above the cut. If the blood flows in jets you may know that an artery is cut, and that is dangerous unless the blood is checked, as it comes directly from the heart to supply the extremities. Draw the bandage tight until the bleeding stops, and close the wound firmly with adhesive plaster as before directed. It may be necessary to have a few stitches taken to hold the edges together, but only a physician—who should be sent for in such cases immediately—can do this. Let the limb rest for the first seven days. If it is the arm it can be carried in a sling to give it elevation so that the blood will gravitate away from the wound.

Bones are frequently fractured or they may be dislocated, that is, put out of joint. In either case place the limb in as comfortable a position as possible and send for a doctor. If he cannot be ob-

tained, the best thing to do is to bring the parts in just as nearly a like position to the other limb as possible and retain by support and a bandage. Be careful always to begin bandaging from the extreme tip of the limb, and extend upward far enough to put all the muscles which help move or support that part of the limb at rest. Do not bandage too tightly at first, and do not pin your faith to liniments, but give rest, neat dressing of the limb, thorough cleanliness and light diet. A gentle rubbing of the rest of the body is a good thing to soothe the patient, keep up the strength, and conduces to recovery.

Sprains are even worse than broken bones in one way. It often takes the over-strained muscles longer to recover. In a bad sprain some of the fibers of the tendons or muscles may be ruptured or a ligament severed so that the parts are possibly displaced. The pain is usually very severe, and inflammation and swelling are apt to take place. Rest is the first thing. It is generally safe to immerse the limb in water as hot as it can be borne, in order to re-establish circulation, and soothe the bruised or lacerated fibers and thus prevent inflammation. Instead of simply immersing the limb let some one pour the hot water over it a half hour, and that will usually banish the pain and soreness, but remember this is absolute: Give the limb perfect rest for a longer or shorter time according to the severity of the sprain, and then use it with care afterwards until it is strong again which sometimes is not for months.

The first thing to be done in the case of either a burn by dry heat, or by scalding, is to dress it with cloths wet in soda and water. In case soda can not be had, a solution of common salt may be used. The first is much the better, however. *If* the skin is broken use neither, but cover it with a soft cloth wet in warm water and keep it moistened by wetting the bandage externally. Be sure to have it covered from the air. Do not put on flour or any thing that will dry upon it and prevent the physician's examination, which in case of a bad burn should be as soon as possible. Carbonate of lead in the form of white lead paint is a good dressing for a mild case in home treatment. The pain of a burn is often intense, sometimes almost unendurable. It is well in this, as in other cases where there is great suffering, to give some anodyne. This, however, should be directed by the physician who should always be summoned when the burn or scald is so severe as to give a great shock to the system. In simple cases the soda and water is sufficient, unless there is a good deal of redness, when a little sweet oil with soda in it will be found very soothing.

Fainting is quite common with some people, and may, under certain circumstances, attack any one. The treatment is very simple. Lay the patient flat upon ~~the~~ back and loosen the clothing about the throat and body to permit the fullest freedom of circulation. Do not hurry to move her, but clear the room of all who are not needed, and give plenty

of fresh air. These things are usually all that is needed.

In case of a spasm, simply restrain the motions of the patient so as to avoid personal injury, but not to obstruct breathing. Do not absolutely prevent the motions of the lower extremities as that is sometimes Nature's method of stimulating recovery.

Hemorrhages are usually very alarming to people, and yet when it is remembered that they are not necessarily fatal, this great fear can be dismissed. Place the patient in a recumbent position and enforce absolute rest. Do not be flurried yourself and soothe the nerves of the sufferer by the firm assurance that it is by no means a death warrant since not fifty per cent. of those attacked die from the effects. Where the blood issues from the mouth ascertain whether it proceeds from the stomach or air passages. The color will decide this. If clotted and dark it is from the first. If bright red and frothy from the throat or lungs. In the latter case also it will come with a succession of coughs. The best remedy for the latter is salt taken in doses of $\frac{1}{4}$ to $\frac{1}{2}$ a teaspoonful, and repeated frequently. Bits of ice swallowed, and cold water applied to the throat and bronchial tubes for a time, are good. When the blood comes from the throat, sipping a strong solution of alum in water is useful. Do not delay in sending for the doctor at once in such cases.

When the nose bleeds, cold with pressure applied along both sides of the bridge may control it at once.

A solution of salt or alum in cold water snuffed up is good, or cold applied to the back of the neck. A recumbent position is best if possible, but if the blood runs down the throat, then the patient must be turned upon the side, or even raised to a sitting posture with the head inclined forward slightly.

People exposed to the rays of a burning summer's sun are liable to be stricken down with what is called a sun stroke, and the same phenomena sometimes occurs from exposure to great heat when the direct rays of old Sol do not reach them at all. The symptoms are dizziness, sudden pain in the head, nausea and vomiting often, dimness of vision and finally insensibility. The surface heat of the body is frequently greatly increased.

Remove the patient to the coolest place near at hand. Loosen the clothing and apply cold to the head. This application must be changed as often as needed. Fan the sufferer gently. As soon as able to swallow give some little stimulant. Small doses of brandy or whisky and water frequently repeated are good, and sometimes a cup of strong tea is sufficient. When there is vomiting — and it is safe to use it any way — put a mustard poultice upon the stomach, and upon the spine, at the nape of the neck.

Of course what is done must be modified somewhat according to conditions. The above stimulating treatment is to be used when the surface of the body is comparatively cool, and the pulse is frequent and feeble. But if there is great heat, and the

temples throb, while the breathing is a sort of snoring or accompanied with a moaning noise, the patient should be raised a little, turned upon his face and cold water poured continuously upon the head and upper part of the spine for at least five minutes. In all cases send for a physician immediately.

If anyone is poisoned the first thing to be done is to produce vomiting. Send for a doctor at once but do not wait for his arrival before giving a teaspoonful of ground mustard and one of salt stirred in warm water. It will almost instantly come up, bringing the poison with it, but it is very well to follow it with the white of an egg or a teacupful of strong, clear coffee. Drink all the warm water that is possible to help the vomiting, which should be produced several times within a half hour. Of course the physician will at once give an antidote.

The great thing in all emergencies is to preserve the self-control. Many a life is lost because those around become frightened, and not only can do nothing, but make the patient frantic with fear. As you value the lives and welfare of those you love, hold yourself well in hand under such circumstances. Another thing, every housewife should keep a supply of soft bandages, cloths, etc., with a few simple remedies always within easy reach, as no one can tell when some one of the family may need them, and the time that would be lost in hunting them up might be a fatal delay.





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